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PROCEEDINGS

OF THE

ROYAL PHILOSOPHICAL SOCIETY

OF GLASGOW

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President 1898-1901.

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OF THE

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OF GLASGOW

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CONTENTS OF VOL. XXXIX.

PAGES

The Punishment and Prevention of Crime. By J. V. Stevenson, Chief Constable of the City of Glasgow, - - - - - 1-12

Keyboard Percussion Instruments. By Thomas Machell, - - 13-20

Fluctuations of the Building Trade, and Glasgow's House Accommodation. By William Fraser, F.S.I., Surveyor and Valuator, - - - - - - - - - - - - - 21-40

Heusler's Magnetic Alloy. By Robert Jack, M.A., B.Sc., and Alexander D. Ross, M.A., B.Sc., - - - - - - 41-46

Don Quixote. By William Paton Ker, M.A., LL.D., Professor of English Literature, University College, London, - - 47-59

Lord Kelvin. By Professor Magnus Maclean, M.A., D.Sc., F.R.S.E., - - - - - - - - - - - 60-72

Some Notable Scottish Architects. By Alexander Gardner, President of the Architectural Section, - - - - - 73-91

The Construction of Permanent Magnets from Specimens of Nearly Pure Copper. By James G. Gray, B.Sc., Secretary of the Mathematical and Physical Section, and Lecturer on Physics in the University of Glasgow, and Alexander D. Ross, M.A., B.Sc., Assistant to the Professor of Natural Philosophy in the University of Glasgow, - - - - 92-96

Delitiae Poetarum Scotorum. By T. D. Robb, M.A., - - 97-120

English Epical Theory and the Heroic Poem. By Theodore Douglas Dunn, M.A., - - - - - - - - - 121-142

Some Disputed Points in the Theory of the Steam Engine. By Professor A. L. Mellanby, D.Sc., - - - - - - 143-154

Queensland in 1906. By Thomas Wilson, - - - - - 155-166

319231

PAGES

Some Observations on the Consumption of Alcohol, and on the Comparative Death-Rate from Alcoholic Excess in England, Ireland, and Scotland. By Ebenezer Duncan, M.D., Hon. Vice-President, - - - - - - - - - - - 167-179

Germinal Vitality: a Study of the Growth of Nations as an Instance of a hitherto undescribed Factor in Evolution. By John Brownlee, M.D., D.Sc., - - - - - - - 180-204

Rules Governing the Competition for the Graham Medal, - - 205

Minutes of Session, 1907-1908, - - - - - - - - 206-223

Office-Bearers of the Society, - - - - - - - - 224

Office-Bearers of Sections, - - - - - - - - 225-226

Committees appointed by the Council, - - - - - - 227

Additions to the Library, - - - - - - - - - 228-234

Exchanges with other Societies, - - - - - - - 235-242

List of Periodicals, - - - - - - - - - - 243-245

List of Members, - - - - - - - - - - 246-262

Index, - - - - - - - - - - - 263-267

Early Burgh Organization in Scotland as illustrated in the History of Glasgow, - - - - - - - - - - Appendix.

PLATES.

THE RIGHT HON. LORD BLYTHSWOOD, LL.D., F.R.S., D.L., President 1898-1901, - - - - - - *Frontispiece*

DIAGRAM FACING

I.—Keyboard Percussion Instruments, - - - - - - - 14

II.—The Theory of the Steam Engine, - - - - - - - 144

III.—The Theory of the Steam Engine, - - - - - - - 146

IV.—The Theory of the Steam Engine, - - - - - - - 150

V.—Observations on the Consumption of Alcohol, - - - - - 172

VI.—Observations on the Consumption of Alcohol, - - - - - 176

PROCEEDINGS
OF THE
ROYAL PHILOSOPHICAL SOCIETY
OF GLASGOW.

SESSION 1907-1908.

The Punishment and Prevention of Crime. By J. V. STEVENSON, Chief Constable of the City of Glasgow.

[Read before the Society, 20th November, 1907.]

INTRODUCTORY.

IN every large city there is to be found a substratum of the population living in poverty and degradation. This section is a constant source of danger to the community; a source of danger to physical health and well-being, because of disregard of the laws of health and sanitation; and a danger to the security of person and property, because it is from this section that the criminal class is chiefly drawn.

As our cities grow larger, the difficulty of looking after the poor and the incompetent, the idle and the vicious, becomes greater, and these by pressure of economic conditions tend to draw together, and form what we now call slums.

For the origin of this lowest class, we must go far back in the history of our cities, but we see it constantly augmented in our own times.

There is in the cities a continual demand for labour, and the supply flows in from the country districts. The strong, healthy young man can earn good wages, but he has not learned thrift, and his hard-earned money is freely spent. Much of it goes into the publichouse which is ever near him, and which is his only place of social relaxation. But strength and energy get used up, his earning power becomes less, and the labourer is forced into the slums. Once in the slums, it is very difficult to get out again. The country-born man does not frequently sink to the lowest depths. He does not figure largely among the unemployed who seek for relief; but his children, who lack the vigour and stamina which he brought from the country, and who have not the same power for persistent work, more readily go down in the competition of the cities, and increase the number of incompetent and unemployed. The number is also increased by those who sink through intemperance and vice, as well as by those who sink through no fault of their own, but from economic conditions, such as the displacement of labour through industrial changes.

The case is put in the following words by Professor Prins, quoted by Havelock Ellis:—"The working classes, badly housed, badly nourished, vegetate at the mercy of economic crises. The worker is always on the borders of vagabondage; the vagabond is always on the borders of crime. The entire working classes are thus exposed in the first line, and whether it is a question of disease or crime, it is they who succumb first."

If "casual labourer" were substituted for "worker" in this quotation, it would be more accurate. The skilled worker has reached emancipation through the organisation of Trades Unions. He can now live in comfort; he can secure a provision in sickness and old age through his Friendly Societies. If he is fairly thrifty, he can secure the benefits of education and industrial training to his children.

The labourer has no such organisations; he is like blind Samson grinding in the prison-house; he is truly at the mercy of every economic crisis.

Our most pressing problem to-day is how to reclaim this wastage of humanity in the submerged class, and to prevent fresh accretions to it. Its existence is now regarded both as a danger and a reproach to our state of civilization. The social reformer, the sanitary reformer, and the Christian teacher, all turn their energies to the solution of this problem. It must be confessed that notwithstanding all the work done by the state, by the municipalities, by the churches, by voluntary societies, and by individuals, the results are not at all commensurate with the time, the energy, the zeal, and the amount of money expended. Here and there, individuals are benefitted and reclaimed, but no great impression is made upon the mass of drunkenness, crime, vice, and degradation.

I do not at all mean to depreciate the value of the work that is done. On the contrary, I view, with great admiration, the zealous and unselfish work of both paid and unpaid workers in the field of social reformation, who give their lives to this cause, and I know that much has been accomplished which will bear fruit as time goes on; but the workers are so few, and they have to fight against such tremendous odds, that, relatively, the results are small.

In our manufacturing processes we are constantly endeavouring, and with much success, to prevent wastage, and what but a short time ago, were considered waste products, have now become sources of wealth; but we have not yet discovered any method by which we, as a nation, may prevent the waste of human life and energy, and turn into channels of usefulness the powers that lie dormant in the submerged class, or are used for evil instead of good.

The great difficulty is to segregate the employable from the unemployable; the man or woman who is in destitution through misfortune, from the man or woman who has no desire to work for his or her own living, and merely seeks to live on the work of others. Our organisations and our charities would be quite sufficient to enable the former division to regain their places, were it not that the latter absorbs so much attention and so much money.

The undeserving or unemployable may again be divided into those who are merely loafers and idlers, living on charity in one form or another, and those who are active criminals and prey on the community.

It is to these active criminals that I wish to draw your attention.

Relatively to the population, the number of actual criminals is small. The number on the Scottish Register of Habitual Criminals at the present time is about 11,000, that is, persons who have been twice convicted on indictment of crimes, showing evidence of intention to continue in criminal practices. From this number may be deducted about 2000 who have not been again convicted for ten years back. Some may have died; some have become too old for active criminal work; some may have given up the criminal life. This would leave about 9000 active criminals on the Register. There must be added some hundreds who have not been convicted on indictment, but who have been convicted of lesser crimes in the Police Courts and Sheriff Courts, and some hundreds, who, though addicted to criminal practices, have never been convicted, but are criminals in the making. Ten thousand might be taken as a rough approximation of the number of actual criminals in Scotland. It may be taken, generally, that the first conviction is not a result of the first essay in crime. The conviction is rather the inevitable outcome of a course of conduct extending over a considerable period of time, during which the offender has gradually deteriorated in character and become emboldened in crime.

Notwithstanding the comparatively small number of criminals, our system of dealing with them is such, that an army of police, specially trained, must be maintained to protect the well-doing from this small number of ill-doing.

PUNISHMENT OF CRIME.

The police are often blamed for their failure to bring criminals to justice, especially in cases of house-breaking, or thieving, where the security of property is violated; but the fact is that the advantage is largely on the side of the criminal. In a great many cases, the police could, with moral certainty, put their hands on the criminals, but the law presumes innocence until a perfect chain of evidence has been established, and this must be traced out, link by link, with patience, skill, and perseverance. The police have to keep within the rules of the game while the criminal has a free hand.

Clever thieves may, by their ingenuity, evade the law for a time. In illustration, I may mention the case of the three men who were convicted in Glasgow in 1903 of the theft of £5000 from a bank messenger. None of these men had been previously convicted, yet all were known to the police as living by dishonest means. Two of them were well-known to Scotland Yard as expert thieves and associates of thieves—one for twenty years, the other for eight years. They had been several times arrested in London, but they always got away on account of insufficient evidence. The third man was known to the police in the United States. His criminal career extended back for twenty years.

Criminals of this class are not products of the slums—the slums furnish the less clever class of criminals; the experts in the profession—the clever thieves, housebreakers, forgers, long-firm swindlers, who work on a large scale, are possessed of some education or mechanical skill, such as would enable them to make a fair livelihood, if they chose to exert their talents honestly.

Against the presumption of the innocence of an accused person, there can be no ground of complaint; but there is ground for complaint in the treatment of the convicted criminal. His punishment should tend either to reform him or to deter him from again offending, or to deprive him of the power to do wrong. Our method of punishment is neither deterrent nor reformative, and so the public is not protected, and the offender is not reformed. Frequently the offender resumes his criminal career immediately on his release from prison, and the chances are that he will succeed in committing many crimes before he is again detected. For example: a youthful housebreaker was released after undergoing six months' imprisonment. Five weeks later he was apprehended while in possession of housebreaking implements. In the interval he had been concerned in no less than twelve housebreakings.

When again detected and charged on indictment the offender still appears before the court with the presumption of innocence in his favour, as at his first offence. If convicted, he is again sent to prison for a longer or shorter period, and the only gain is that the public is protected for the few months or the few years that he is deprived of the power of wrong-doing, by being confined.

It is true that the legislature has made an effort to protect the public by imposing certain conditions on the convict who, by his good conduct while in prison, earns the remission of part of his sentence. The principal conditions of release are: that he shall not lead an idle or dissolute life without visible means of obtaining an honest livelihood; that he shall not habitually associate with notoriously bad characters, such as reputed thieves and prostitutes; and that he shall abstain from any violation of the law. The conditions laid down, if they could be enforced, would be a perfect protection against wrong-doing by the convict on licence. If he adhered to his conditions, he would lead a most exemplary life.

Certain powers are given to the police to bring the licensee before the court if he breaks any of the conditions of his licence, but these powers are not found operative, and they are rarely exercised. The licensee is bound to report himself monthly at the police office of the place in which he resides, and to notify any change of residence. This is, practically, the only supervision which the police can exercise over the licensee.

If they visit the address given to see if he actually resides there, or if he is engaged in any honest occupation, he will indignantly protest that the police are preventing him from getting a job, by making his antecedents known. If he is an old hand, he will send his complaint to very high quarters, and the police officer, who is endeavouring to do his duty by the public, will be put upon his defence, and called on to explain. This makes the police very chary of interfering with convicts on license, except on positive proof of wrong-doing. The convict may altogether evade the police by taking up his residence in fresh ground under an assumed name, and there continue his criminal career. If he is unlucky and falls into the hands of the police, he may be finger-printed and have his antecedents traced, but with skill and luck he may carry on for a long time.

I know that it is often said and believed that the police habitually follow up convicts, prevent them from getting employment, or get them dismissed from situations by informing employers of their antecedents. I have had to investigate several complaints of this nature made by convicts, and I have not found a single genuine case. Such complaints are never made by well-doing convicts.

The fact that a convict is residing in a district is known to very few members of the police force. The few who are aware of his existence are instructed to act kindly towards him, and encourage him to abandon crime and live honestly. They are not to communicate his name or any information regarding him to anyone, except a member of the police, and then only when necessary, and they must be careful to avoid doing anything which would make it difficult for him to obtain employment.

On the other hand, many instances could be given where the police have helped convicts to get employment.

If the convict returns to criminal courses, on each fresh detection, the same costly process of trial must be gone through. When account is taken of the time of police, witnesses, jurors, counsel, judges, and other attendant expenses, it will be seen that a trial is a very costly process indeed ; yet there is no permanent result, for conviction and imprisonment are merely incidents in the habitual criminal's career, which he takes in the spirit of a gambler meeting with losses. He has been unlucky.

Let me give a few examples of continuance in crime :—

So far back as 1861, A. B. was convicted of theft by housebreaking, and sentenced to five years' penal servitude. He kept clear of detection until 1875 when he was convicted of theft, and sentenced to imprisonment for fifteen months, followed by three years' police supervision. During all the years since 1876 this man has been well known to the police as a receiver of stolen goods, but such is the ingenuity with which he carries on this work, that he has never again been convicted. Convicted thieves have repeatedly stated that they sold stolen goods to him, but the goods could never be traced. On one occasion, when his house was being searched, this man said to the police, "no man in his senses would buy property when there was a third party present."

C. D., aged 48, was three times sentenced to penal servitude, the terms amounting to 23 years. His first conviction was in 1876.

E. F., aged 65, began his criminal career in 1857. He was three times sentenced to penal servitude, the terms amounting in all to 28 years, with shorter sentences amounting to nine years.

Or take a couple of cases of men receiving only short sentences of imprisonment.

G. H., aged 33, has 32 convictions for theft, commencing in 1890.

J. K., aged 43, has 23 convictions for theft, extending from 1875, when he was sent to a reformatory, to the present time, and covering eight years of prison life.

These examples, which might easily be multiplied, will show that punishment by repeated imprisonment, whether for longer or shorter periods, does not tend to reform or deter the criminal. A long sentence has sometimes the effect of checking a man at an early stage of wrong-doing, and has also the effect of deterring others, but short sentences have not the same effect.

The short sentence, equally with the long sentence, tends to remove from the man the feeling of the disgrace of going to prison, and it does not give time for the prison discipline to make any lasting impression on the character. Indeed, after the feeling of the disgrace has passed, there are few terrors in present-day imprisonment. The prisoner is well housed, his food is good and sufficient; the amount of labour imposed on him is not excessive; the state of his health is carefully looked to; he has some time for reading in his cell; he is free from care; the monotony of his days is relieved by entertaining and instructive lectures. An old hand can always create a diversion by writing a letter of complaint to the Governor, or the Prison Commissioners, or even to the Secretary for Scotland, which will receive instant attention, and reports and explanations will be called for from the officials. The ages reached by many habitual criminals, who have passed a considerable portion of time in prison, is a proof of the healthfulness of prison life.

We have passed the days of vindictive punishments, and of repressive punishments, and we now make some attempt to reform the criminal by good, and even generous treatment, and by endeavouring to impart to him some degree of manual or literary education while in prison. But is there not a danger of going too far in the direction of making punishment easy for the habitual criminal? The way of transgressors used to be hard; we are making it easy. The habitual criminal is not deserving of any sympathy. He is a beast of prey, and he preys on the community without any more pity than the beast of the jungle feels for his victims. Yet, if we are to judge from the popularity of the life stories of notorious criminals, there are many who view the criminal with admiration, and invest him with a romance which does not really attach to him.

The effect of such publications cannot but be mischievous. Not only do they tend to warp the minds of our youths, and lead them to regard criminals as heroes, but it is also found that the publication of the details of crimes leads to imitation of those crimes. This is true even of brutal cases of homicide, as well as of cases of robbery, theft, outrage, and lesser crimes. If the Press could cease to publish the details of crimes, it would be for the public benefit, but, of course, the Press must publish what the public demand. At the same time, it must be acknowledged that the publication of criminal matter often causes persons, having knowledge, to come forward, and thus becomes an aid in the detection of crime. The police always find the Press ready to assist in this way, and the knowledge confided to the members of the Press, when the police seek their aid, is never improperly used.

PREVENTION OF CRIME.

If, then, our present system of punishment is a failure, we have still to face the question: *How are criminals to be reformed or deterred from criminal practices, and how is society to be protected?*

Other countries have gone beyond us in the rational treatment of criminals. The most advanced work on two important principles: (1) that a person should not be sent to prison, so long as there is hope of his reformation outside the prison: (2) that when it is found necessary to commit any person to prison, he should not be discharged until he has shown evidence of his fitness for liberty.

The first of these principles, *that a person should not be sent to prison so long as there is hope of his reformation outside the prison*, is in force in many European conntries, in some British Colonies, and in the United States. We began to recognise the idea in 1887, when the Probation of First Offenders Act was passed, as the preamble states, "For the reformation of persons convicted of first offences," who might be released on probation of good conduct and bound to come up for judgment when called upon. This Act was defective, in that it did not provide any machinery for ensuring or enforcing the good conduct of the released probationer. It was only when charged with a fresh offence that he again appeared before the court. The defect has only now been remedied in the Probation of Offenders Act, 1907, which will come into operation on 1st January, 1908. Under this Act, Probation Officers may be appointed who will exercise supervision over the probationer, and report on his conduct to the court.

An informal system of probation has been in force in the Glasgow Police Courts since December, 1905, with results which on the whole are satisfactory. The Probation system must be used with discrimination. For instance, it would be a great mistake to put a boy on probation who is already a fit subject for the Industrial or Reformatory School, and who is not likely to improve from the nature of his home surroundings.

The second principle, *that a person committed to prison should not be released until he has shown evidence of his fitness for liberty*, has not yet taken root in our minds, but it is the true complement of the first.

When a person shows by continuance in crime, say, after a third conviction, that he has adopted a criminal career, and that imprisonment is no deterrent to him, why should he not, for the protection of the community, be placed under control, where he would receive moral and social training, and be made to earn his subsistence?

This course would not make the criminal more costly than he is at present. We have now to pay for his maintenance and control while he is in prison, and he takes toll of our goods while he is out of prison. On the other hand, we would have some gain. He could not thieve while under control; our security being increased, the cost of protection would be reduced; the expense of many trials would be avoided; and, greatest gain of all, he could not contaminate younger persons and lead them into criminal practices.

Medical men sometimes tell us that crime is a symptom of insanity, and that criminals are suffering from mental aberration.

If this be so, it is an additional reason for putting the criminal under permanent control, and treating him for mental disease.

It may be objected that to put criminals to remunerative work would introduce unfair competition into the market, but work could be undertaken which would not be immediately remunerative, such as the reclamation or re-afforestation of land, which would require many years to repay interest on outlay.

In the United States the indeterminate sentence is largely used. The motto of the newspaper of the New York State Reformatory at Elmira, where males between the ages of sixteen and thirty years are received, is, "No man, whatever his offence, ought to be discharged from restraint, except upon reasonable evidence that he is morally, physically, and intellectually capable of earning a livelihood." It is there found that "the best method for the reformation of criminals is to subject them to a system of discipline and training, which is found essential to the training of the normal youth, to correct moral and social living."

Indeterminate sentences have been introduced in, at least, one British Colony—New South Wales. The law passed there in 1906 (I quote from the Report of the Howard Association for 1906) "creates a criminal *black list*, and provides that, when a person is convicted of an indictable offence and has been three times convicted of similar offences, he may be declared a habitual criminal as part of the sentence. He then serves the allotted imprisonment under ordinary conditions, but, at the close of it, enters on his indeterminate sentence. In this stage the conditions of gaol life are relaxed as far as is possible with security of detention. Release is obtained when it is thought reform has been accomplished, but not till suitable employment has been found for him, and then only on parole and subject to conditions framed in the interests of the subject and of the public alike."

The prospect of an indeterminate sentence would, I believe, prove more deterrent to the criminal than our present system of punishment. During his detention he should have some training to fit him to earn an honest livelihood on release.

If there were only the existing set of criminals to deal with, they would, of course, die out in time, but the criminal class is being constantly recruited from the youths of our cities. As there are such small results from our attempts to reform the criminal, would it not be wiser to direct our best effort to prevent our youths from drifting into the criminal class?

We are very wasteful of the youth of our cities, the children of the poor. It is true that they are compelled to attend school until they reach 14 years of age, but even while under that age they are permitted to be employed as street vendors and messengers, out of school hours. Over 14 years of age, they may be wholly employed in street trading.

I regard street trading as a bad training and a bad education for young boys. It does not give the disciplinary teaching of steady work, as the learning of a trade does. The few shillings the boy earns may mean much to very poor parents, but his future is being sacrificed for present gain. He is not being fitted to earn more, and he very often reaches early manhood without having increased his earning power, while the street training, with its excitements, has unfitted him for the monotony of steady work. Is it any wonder that so many of our youths drift into crime?

Compulsory education has not done all that was expected. The children and youths in our streets to-day are not better in speech, or manners, or morals than were the children and youths of a generation ago.

With the spread of education there has grown a relaxation of the stricter discipline of the last generation in the home, in the school, and even in the law as represented by the policeman and the magistrate. Young children are found committing offences such as malicious mischief and theft, due to lack of parental control. Boys and girls in their teens become impatient of home restraints, and take to independent living in lodging houses, where there are no restraints, and where the influences are not for good.

The result of this want of early discipline is that our youths have not learned self-control and fall easy victims to evil influences. Contact with crime and with criminals destroys that sense of social disgrace which is such a strong deterrent against wrong-doing amongst the better classes.

A boy under 14 years of age, whose surroundings are such as are likely to lead him into criminal paths, may be sent to an Industrial School, and a boy under 16 years of age, who has been convicted of a crime, may be sent to a Reformatory; but there is no provision for dealing with the youth over 16 who has committed a crime, or who is likely to fall into criminal ways. The years from 16 to 19 are the most critical of the youth's life, for in those years his future is determined. Yet there is no aid for him then. If he is guilty of a crime, he must either go scot-free to continue in a downward course, or he must be sent to prison as an adult. Why should not the age for commitment to Reformatories be extended to at least 18 years, as in several continental countries. If the age for reformatory treatment of some kind could be extended to 20 or 21, there would be hope of salvation for many who have commenced a criminal career, and many of our hooligans could be taught the virtues of work, and obedience, and respect for authority. In the year 1906, 697 boys between 16 and 21, were convicted in Glasgow of crimes against property, that is, theft, housebreaking, robbery, and such like.

By the French Law of April, 1906, a youth sent to the House of Correction, which corresponds in some degree to our Reformatory, is detained there until he is 21 years old, and he is then sent to the Army. It would be a great benefit to many of our street youths to be sent to the Army for a period of training.

There are many youths and men living dishonestly, or living on the proceeds of vice or illegality who escape the meshes of the law, and I would go so far as to suggest that where it is known that any youth or man, over 16 years of age, is not engaged in any lawful occupation, and has no visible means of subsistence, there should be power to bring him before the Magistrates, and if he is unable to show that he is living honestly, or endeavouring to make an honest livelihood, the Magistrate should have power to send him to a house of industry, where he would be kept to steady work for a prolonged period and made capable of earning an honest livelihood.

To prevent the wastage of youth, we should have less street employment, and more industrial training. The want of industrial training is felt in all large cities. In a recent report of the London County Council it is stated:—"There is every reason to believe that the number of boys who enter a skilled trade on leaving school is steadily decreasing. The high wages a lad earns as an errand boy, or district messenger, or van boy, or in other occupations confined to youths, are more attractive than the low wages associated with industrial training."

So long as the children of the poor are allowed to get their education in the streets of our cities, and to grow up without some industrial training to help them to earn an honest livelihood as men, we must not be surprised if they develop into recruits for the criminal class, and become a burden on the community.

Keyboard Percussion Instruments. By THOMAS MACHELL.

[Read before the Society, 4th December, 1907.]

THE modern pianoforte, with its perfect mechanism, enormous range of 88 notes and 224 strings, has now, it may be safe to assert, culminated in fullest development. During the past fifty years very little genuine improvement has been effected, the compass has been increased slightly, and the volume of tone largely, but the natural defects of the instrument remain untouched.

Manufacturers, composers and pianists have one and all striven —and rightly so—to minimise and conceal, as far as possible, the three inherent defects of the instrument, viz:—the quick dying away of the tone in the middle register immediately after the blow has been struck, the extreme shortness of tone in the upper register, and the almost complete absence of root or fundamental tone in the lower register (what little there is of root tone being practically hidden by the disproportionate loudness of the upper partials).

Recognising the limitations of an instrument whose vibrations depend upon tension with all its attendant troubles, inventors have at different periods, contemporary with the history of the pianoforte, sought a solution in the endeavour to produce musical sounds from substances whose vibrations depend on their own inherent elasticity. It is the purpose of this paper to describe some of the more notable attempts, to point out causes of failure, and to show the direction in which success is now attainable.

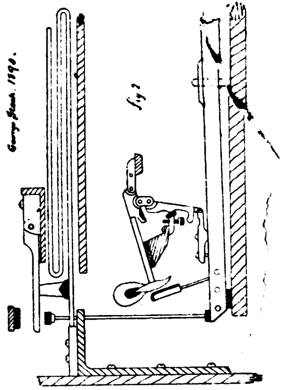
Passing over numerous attempts to produce a satisfactory keyboard musical instrument from rotary frictional appliances acting on glass or metal, we will confine our attention to instruments of percussion, where a keyboard the same or similiar to that of the pianoforte is used. The well-known percussion stop invented by Martin of Paris, and used by Alexander and others in their harmoniums, may be cited as one step in the direction indicated. Hammers of lead covered with thick soft felt when made to strike the reeds in a harmonium produce pleasant, but feeble musical sounds. Crawford, a Scotchman, patented in 1862 an instrument of five octaves in which he used, in place of reeds, tongues of steel, each separately fixed to a stout horizontal bar of metal, the principle being that of the musical box, with this difference, that the sounds were produced by striking and not by plucking.

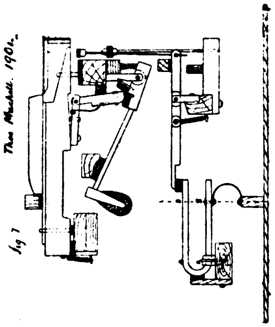
Quite a number of these instruments were made and sold under the name of the "Bell Piano." The tone was loud, but short,—so much so that dampers were hardly necessary; and all the notes lower than middle C were practically useless owing to their disagreeably metallic character. Following on similar lines, George Woods of America, in 1873, introduced in combination with some of his reed organs the use of rods of steel bent to the shape of hooks or forks. (Fig. 1.) Each hook was clamped at the extreme end of one of its prongs, to a metal bar, on a plan somewhat similar to that adopted by Crawford.

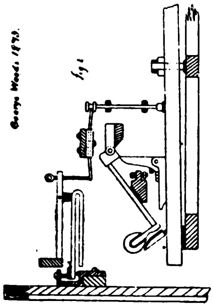
The tone of the hooks as used by Woods was pleasant, flute-like in quality, and fairly powerful; but it was also somewhat short, and below middle C unsatisfactory. A further development of this idea was made by George Steck of New York, who, in 1893, patented an instrument in which the sound producers from the middle register downwards were made in the form of hooks with *three* prongs instead of two. (Fig. 2.) In the upper register single strips of metal were used on the principle of the Glockenspiel. This instrument, evidently the outcome of much thought and experiment, does not appear to have met with any degree of success.

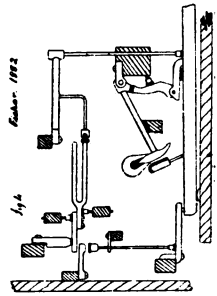
Claggett of London,—as far back as 1788—and subsequently Pape,—a resident of Paris—in 1855, made a number of unsuccessful attempts to produce a keyboard instrument with tuning forks of the ordinary pattern as sound producers, and was followed in 1866, by Victor Mustel, also of Paris, who was largely successful. (Fig. 3.) To augment the tone and improve the quality, Mustel associated with each fork, first of all organ pipes, afterwards resonant chambers, each chamber tuned to resound to its corresponding fork. The forks were slotted out from flat bars of steel, and arranged so that one prong should vibrate closely in front of an opening in the corresponding pipe or chamber, when the other prong of the fork was struck. The forks were ranged in a vertical

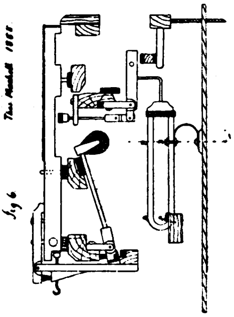
Diagram I.

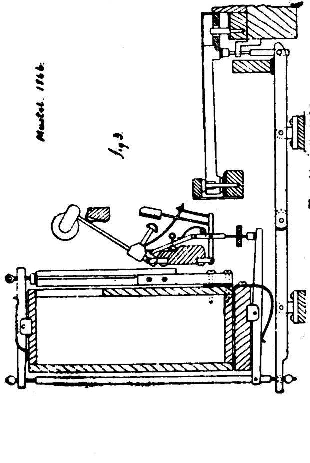

George Steck 1890.
fig 2

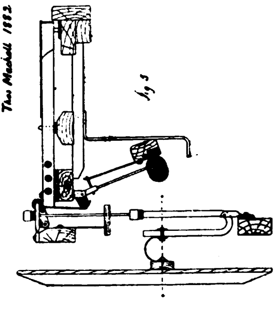

Thos Machell 1901.
fig 7


George Woods 1873.
fig 1


Fisher 1882
fig 4


Thos Machell 1888
fig 6


Machell 1866.
fig 3


Thos Machell 1882
fig 5

position and isolated from the chambers by cushions of non-vibrating material. The mechanism was that commonly used in an upright piano.

The singing effect throughout the compass was superior to the pianoforte, and dampers were provided for every note. There was something peculiarly fascinating about the tone of Mustel's instrument, and it made a great sensation when it was first introduced. Unfortunately the plan of construction was based on very expensive lines, and the price was all but prohibitive. The instrument failed to provide good notes in the lower register, and did not eliminate the thudding sound made by the hammers when striking the forks. Mustel subsequently produced an orchestral instrument, named the "Celesta," in which the sound producers are thin strips of metal supported loosely at their nodes (as in the Glockenspiel), every strip having its own resonant chamber. It is made to sound by keys and mechanism as in a piano. Owing to the space taken up by the chambers (which become larger by degrees from top to bottom,—nearly doubling in size at each octave),—the interior does not lend itself well to the use of piano mechanism, and complication is the result. The compass is four octaves, lowest note middle C, and the retail price is 49 guineas.

Fischer of Dresden, in 1882, patented an instrument of six octaves named the "Adiaphon" in which tuning forks with shanks of the ordinary pattern were used in association with a sounding board. (Fig. 4.) In this instrument the forks were arranged horizontally so as to be acted on by the mechanism of a grand piano. The sounding-board was placed vertically at the back of the instrument, and there was an arrangement by means of which the shank of each fork was brought into contact with the sounding-board the moment after the fork was struck by the hammer.

The "Adiaphon" which I saw in London, some years ago, was much larger than an upright piano; and notwithstanding its great size the instrument was feeble and unequal in tone. The plan of conveying the vibrations of each fork to the sounding-board after the blow, lacked the elements of durability and certainty. The forks were roughly forged and irregular in shape (Mustel on his part secured great accuracy by using a specially constructed slotting machine). The sounding-board was also much too large, and not planned to synchronize with the forks in their progressively varying pitches.

Before describing the Dulcitone (Fig. 5, 6, 7) which, I believe, is the only keyboard percussion instrument having steel forks for sound producers at present on the market—I will try to explain the main difficulties experimentalists have had to encounter in their efforts to utllise the principle of the tuning fork—the ideal tone producer.

The first and most serious difficulty has been that of cost. To forge out of solid bars of steel a range of say 61 forks, graduating in size from large to small (each requiring to be shaped, slotted out, tempered uniformly, and tuned), was not an easy task, and could not be done cheaply. Experienced workmanship was indispensible, because if both prongs of each fork were not proportioned exactly alike, the tone would be feeble and of short duration. The next difficulty to be overcome was the thudding noise caused by the hammers when striking the forks. If the shank of an ordinary tuning fork be held so as to rest firmly in contact with a sounding-board, and the fork in this position be struck by a suitable hammer, the sound produced will be greatly marred by the impact of the hammer.

In his efforts to overcome this difficulty, Mustel—while adopting the principle of resonance—used cushions to insulate the lower parts of his forks from direct contact with the sound chambers. Fischer's plan, as already explained, was to bring his forks into contact with the sounding-board immediately after the blow from the hammer was given.

The way in which these and other difficulties in the construction of the dulcitone have been met will be gathered from what follows. It was conclusively proved, as far back as 1882, that the function of the bottom of a tuning fork is simply that of a bridge connecting and supporting the two vibrating prongs, and that it does not vibrate as a loop or ventral segment, as was at one time taken for granted (mainly on the authority of Chladni). It is of no advantage, therefore, except for use by hand, to provide a shank or handle for each fork. By discarding the shank, forks can be made inexpensively and with great uniformity of result, from rolled bars of steel. All that is necessary is to provide suitable graduated mandrils, and an inexpensive plant, which should include a small gas blast furnace and driving, boring, grinding, and rumbling machines. Where a suitable quality of steel is used, tempering may be dispensed with.

The nodes on both prongs of a fork are always to be found in the same relative position opposite to each other. The node from which springs the fundamental or lowest sound is found at the bottom of each prong just at the bend. This node for clearness we will call *A*. (Fig. 6, 7.) The other node with which we have to concern ourselves, and which we will call *B*, is to be found by dividing each prong into four equal parts. A fourth part from the free end of the prong is the position of this node. There is another way of finding the position of the *B* node.

If a fork is held vertically so that its bottom rests on a sound-board, and in this position is struck on one prong by a suitable hammer held by the right hand, while two fingers of the left hand move lightly up and down the side of the other prong, a point will be found where a distinct harmonic—sounding two octaves and an augmented fifth above the fundamental—will be produced. The position of the point giving this harmonic will be found to agree with the node *B* found by measurement. It is important that the correct position of this node should be ascertained in *every* fork, because experience has shown that the hammers must strike exactly on it in order to eliminate the harmonic and thus produce purity of sound. By adopting the use of a semi-circular band of thin spring steel, one end of which is rivetted to the *B* node of each fork, and the other end screwed to the bridge on the sounding-board, a threefold purpose is served.

First. Provision is made for holding each fork securely in position, and at the same time assisting and prolonging its vibrations.

Second. By rivetting the springs at node *B* on the one prong, and causing the hammers to strike on node *B* on the other, certain disagreeable metallic sounds that have their root in this node are effectively suppressed.

Third. The forks and springs by yielding as they do when the hammers strike, eliminate all but entirely the thudding sound, so very pronounced in all previous experiments.

With good workmanship, careful choice of hammers, and a well planned sounding-board, instruments on the above principle can be made as free from anything objectionable as is a good pianoforte.

All the experiments I have made go to show that where the keys and mechanism of a piano are required to act upon forks, the principle of the sounding-board has many advantages over resonant chambers, pipes, by reason of their bulk, being out of the question. The sounding-board is more adaptable and lends itself to greater expansion. To take advantage of the two methods of sounding-board and resonance in combination, which has often been tried, would not be easy even if it were possible.

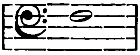
The question, which is the best type of sounding-board to synchronize with a range of forks that have all to be brought into direct contact with it, is only to be answered by laborious experiment, based on theoretical and practical knowledge. The analogy of the harp and piano, our two most fully developed instruments in which the conditions are similar, give little help. We are met at the outset by the strange anomaly that, while the sounding-board of the harp is thin at the treble, and thickening gradually towards the bass, the sounding-board of the piano is exactly the reverse. Again, the harp sounding-board is practically without bars, while the pianoforte sounding-board is heavily barred throughout. In experimenting, the main difficulty lies in the fact that the result of any variation in the shape, thickness, position of bridge, or manner of fixing the sounding-board cannot be satisfactorily ascertained until the whole range of forks is placed in position. Similar difficulties were doubtless met step by step by makers of harps and pianos, before the present degree of perfection was reached.

In the dulcitone as at present made, the sounding-board is of uniform thickness, free at the bass end and without bars. The bridge crosses the fibre at a right angle; and as the case is brought near to the bridge, at the treble end, a gradual sharpening towards the treble is the result. This simple type of sounding-board—which has only been adopted after experiments extending over many years—synchronizes well with the whole range of forks, and gives evenness and a proper balance of tone throughout.

From the sectional drawing (Fig. 7) it will be seen that in the dulcitone the forks are made on the plan just described—without shanks—and have their vibrations conveyed from the *B* node to the sounding-board by means of curved springs. Each fork has also a small piece of rubber tubing encircling one of its prongs at node *A* and rests on a rail into which is screwed L shaped wires. These wires, with the aid of a suitable tool, are turned so as to overlap the rubbers and hold the forks steadily in position. To remove a fork all that is necessary is to turn the wire aside and undo the single screw which holds the fork spring to the bridge, The mechanism is a down-striking one, and, being compact in form, does not choke the sound by taking up too much room in the case. All its parts may be readily adjusted. The keys, weight and depth of touch, repetition and damping, are all exactly in agreement with what is found in a modern pianoforte. It will be obvious that the principle of construction lends itself to lightness and portability.

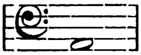
In its most portable form the compass is three and a half octaves, lowest note :—

F



with a compass of five octaves, the lowest note is :—

A



The question may naturally arise,—why limit the compass downwards to *A*? The answer is found in the character and quality of the tone itself. The sounds produced give in a remarkable degree the impression of purity and of depth, the fundamental seeming to be an octave lower than what the ear recognises to be the true pitch; there is no necessity, therefore, to carry the compass much lower, the ear being satisfied. On the other hand, the upper notes—having more life and singing character than the corresponding notes on a pianoforte—are really useful and effective.

The tone carries well and appears to increase in volume with distance, consequently it is heard to better advantage a little way off than near at hand.

Although essentially an instrument of four feet tone, the dulcitone (owing to its characteristic qualities), lends itself well to the performance of classical music written for instruments of eight feet tone. In some measure it would appear to fill the gap between the piano and the organ, as it appeals to the pianist—who craves for, but cannot produce anything but an approximation to sustained sound—and to the organist, who craves for but cannot give accentuation. Bach's "Wohltemperirte Klavier" for instance, played on the dulcitone is, to a musician, something of a revelation.

In my opinion, the tendency with makers, and with performers on pianofortes and other musical instruments, has been for years too much in the direction of mere loudness. That this quality has been greatly overdone is sufficiently indicated by the fact that a feeling of exhaustion is now a common experience with a large section of the musical public after a prolonged piano or organ recital or an orchestral performance. Be this as it may, there are numerous signs of a re-action taking place in favour of simple and less strenuous ways of giving musical pleasure; and possibly the dulcitone—upon which an artist can unobtrusively express every shade of musical thought and feeling—may prove a step in the right direction.

[After the reading of the paper a number of pieces of music were rendered to illustrate the powers of the dulcitone when played, (i) as a solo instrument; (ii) along with the organ; (iii) with organ and violin; (iv) in accompanying the voice.]

Fluctuations of the Building Trade, and Glasgow's House Accommodation. By WILLIAM FRASER, F.S.I., Surveyor and Valuator.

[Read before the Society, 15th January, 1908.]

A STARTLING statement was made by Mr Percy Alden, M.P., a month or two ago in a lecture which he delivered at Cambridge. He is reported to have said that "putting the matter broadly, if every house in the kingdom were occupied, and every room in every house, there would not be sufficient accommodation for the inhabitants without overcrowding." He pointed out that if the insanitary dwellings were eliminated, the overcrowding would of course be accentuated.

Now Glasgow has an unenviable notoriety in the matter of overcrowding and in what is graphically called "compression of population." When, therefore, on the one hand we hear a statement like that just quoted, and on the other we find pessimistic proprietors of dwelling-houses deploring the overbuilding in Glasgow, a little time may perhaps be profitably spent in seeking for whatever enlightenment and comfort is to be derived from a study of some statistics regarding the building, owning, and occupying of Glasgow houses.

As regards occupation, it is well to be familiar with some of the figures of the census of 1901, and to contrast them with those of 1891, 1881 and 1871.

I have taken the liberty of excerpting a number of statistics to form Table I. from Dr Chalmers' most interesting report on the census of 1901. The most reliable estimates of population in the years between the census periods are calculated on the average number of inhabitants per occupied house, ascertained with a close approximation to accuracy at each census.

There are two sources of increase of the city's population. One is the excess of births over deaths or "natural increase," and the other is the excess of immigration over emigration from the city. Dr Chalmers in his report clearly showed that while there was a gain to the city from an influx of population in addition to

TABLE I.—Comparison of Census Returns, etc. (Taken principally from the Medical Officers' Reports).

	1871	1881	1891 Old Glasgow.	1891 Greater Glasgow.	1901
Population of City, -	477,732	511,415	565,710	658,073	761,712
Percentage rate of increase during 10 years,	21·64	4.0	10·62		15·75
Acreage, - - - -	5,063	6,111	6,111	11,861	12,681
Number of houses, -	103,030	119,059	122,991	141,545	162,678
Percentage of unoccupied houses, - - -	2·1	10·7	4·4	4·7	4·5
Average number of rooms per house, - - -	2·307	2·322	2·325	2·562	2·584
Average number of persons per room of inhabited houses (excluding Institutions, - - -	2·078	2·040	2·033	1·865	1·846
Average weekly rent per room, - - - -	1/8¼	1/10¼	1/9½	1/11¾	2/0½

NOTE.—Extensions of the City Boundaries took place in 1872, 1878, 1891, 1896 and 1899.

the so-called "natural increase" during the period 1861-1871, there was a large loss between 1871 and 1881, and a smaller loss from 1881 to 1891, owing to an exodus of the inhabitants. Part of this movement was described by him as an overflow into the surrounding districts. In 1871 the census percentage of unoccupied houses was only 2·1, but in 1881 (a time of great depression in nearly all trades) it was as much as 10·7. The recovery was gradual. From 1891 to 1901 an influx of population again added to the natural increase, and at the census of 1901 the percentage of unoccupied houses was reduced to 4·5.

It is perhaps as well to remark here parenthetically that the census figure refers to *unoccupied* houses upon the night of the census, and not to *unlet* houses which are shown upon another table.

On comparing the house accommodation which existed at the successive census periods, it is gratifying to find that the average number of rooms per house shows a gradual increase, although slight. A satisfactory feature of this improvement is that it is partly brought about by a diminution in the proportion of single apartment houses. Besides the increase of size, sanitary and other conveniences are now being provided on a scale far in advance of those of former times. For example, some two apartment houses are now being equipped with a good bathroom, hot water supply, electric light, etc. Such things were not even thought of in that class of house twenty years ago.

It is still more satisfactory to observe that the average number of occupants per room is gradually decreasing, but we may well be pardoned if we feel and express impatience at the slowness of progress in this respect. The Registrar-General's standard of overcrowding is on the basis of a maximum limit of 2 persons per room. The overhead figures for all Glasgow were 1·846 in 1901, and 1·865 in 1891. But the occupants of one apartment houses in 1901 gave an average number per room of 3·18, and those in two apartment houses 2·46, the corresponding figures for old Glasgow in 1891 being 3·23 and 2·47.

The unsatisfactory state of matters was perhaps better described in 1891 when it was said that 59 per cent. of the population of Glasgow were living in apartments occupied by a greater number than 2 persons, and the unfavourable comparison for our city was made by giving the percentage for London at 19, for Liverpool 10, and for Manchester 8.

The legal Glasgow standard of overcrowding allows, as is well known, a minimum room capacity of 400 cubic feet per adult, and Dr Chalmers showed in his report, by examples, that the average Glasgow apartment might be reckoned as being about 50 per cent larger in cubic space than the average London room. Nevertheless I am sure we all earnestly desire to see the standard of comfort and house accommodation in Glasgow greatly raised above what it is at present.

I have not included in the table any comparison of the density of the city's population per acre or per square yard. Calculations of an overhead sort on this basis are perhaps interesting, but the figures are apt to be sometimes misapplied. An example of this by way of caution may be given.

In the last annual report by the Medical Officer the extent of ground in an insanitary area was given at 8·8 square yards per inhabitant, and this was contrasted with the average of 66·7 for the whole city. Now the latter figure is calculated over the total area including parks and factories, open spaces and business premises, and consequently a comparison of this sort is misleading to the general reader.

It may, however, be instructive to state that the density figure for a modern working-class tenement block works out at 9 to 10 square yards per head, supposing it to be occupied up to but not exceeding the Registrar-General's limit of overcrowding. In a block of small terrace houses similarly occupied the figure would probably reach say 25 to 30 square yards. These areas all include proportions of streets, etc.

There are certainly advantages in having the population spread out, but these advantages in Glasgow and other Scotch towns have been sacrificed to the material considerations of housing large numbers of workers near to the places of their employment, and to economy in house construction and accommodation.

As an index to the social and sanitary condition of the people, the density per room is much more reliable than the density per acre or per yard can ever be.

Before passing from Table I. it should be noticed that it affords statistical evidence that the existence of spare housing accommodation has not any ameliorating effect upon the density per room or the compression of the population. In 1881, when there was a large proportion of empty houses (about 10 per cent.), the average number of persons per room in old Glasgow was 2·040. In 1901 this average number was reduced to 1·846, although the margin of empties was only about 4 per cent. One is forced to the conclusion that the mere provision of additional houses will not reduce the overcrowding.

In order to show the state of letting at some intermediate periods I have made up Table II. The calculations are based on statistics prepared by the City Assessor from time to time. I am much indebted to the kindly assistance of Mr Lean, of the Lands Valuation Office, in making up this table.

The comparisons speak for themselves, but the figures for the year ending Whitsunday, 1907, which are the latest available in a complete form may be examined in some detail. The percentage of unlet rental from all classes of property has reached 5·35. The unlet rental from dwelling-houses shows a percentage of 7·2, while

TABLE II.—Proportions of Unlet Rental in Glasgow, and Average Rent per House at Various Periods:—

Year ending Whitsunday	Total Rental	Total Unlet Rental	Percentage Unlet	Dwelling House Rental	Unlet Rental of Houses	Percentage Unlet	Number of Houses	Number of Unlet Houses	Percentage Unlet	Average Rental per House		
	£	£		£	£					£	S.	D.
1871	2,226,465	63,704	2·86	1,021,159	23,242	2·28	100 504	2,090	2·08	10	3	2
1875	2,740,032	138,823	5·07	1,165,051	41,086	3·53	107,520	4,097	3·81	10	16	9
1877	3,117,827	234,376	7·52	1,295,910	68,817	5·31	114,350	5,619	4·91	11	6	8
1882	3,417,263	336,244	9·84	1,284,067	116,559	9·08	119,820	11,796	9·84	10	14	4
1887	3,390,999	221,190	6·52	1,276,547	72,975	5·72	120,782	7,924	6·56	10	11	4
1891	3,455,510	173,259	5·01	1,313 604	53,487	4·07	123,841	5,816	4·69	10	12	2
1896	4,283.928	146,500	3·12	1,983,148	56,420	2·84	150,346	4,388	2·92	13	3	10
1902	5,027,753	114,963	2·29	2,252,294	44,256	1·97	163,291	4,467	2·74	13	15	10
1903	5,093,057	139,871	2·75	2,303,736	55.695	2·42	165,187	5,023	3·04	13	18	11
1904	5,407,186	187,089	3·46	2,377,870	87,998	3·70	168,246	6,640	3.95	14	2	8
1905	5,589,942	251,134	4·49	2,454,405	138,367	5·54	172,303	10,292	5·97	14	4	10
1906	5,770,570	307,731	5·33	2,521,871	174,366	6·91	177.942	13,627	7·66	14	3	5
1907	5,840,256	312,167	5·35	2,542,944	183.387	7·21	179,591	14 176	7·90	14	3	2

in point of numbers there are 7·9 per cent. of the total houses without tenants. The comparison of these percentages points to the fact that the cheaper houses are the worse let. On going more closely into that, I found that out of a total rental of £737,461 derived from 96,678 houses under £10, the unlet amount was £61,488 and the number of houses represented by this was 8,360. Reduced to percentages the empties in this class are thus 8·3 in point of money, and 8·5 in point of numbers. That, again, shows that the unlets are in greater proportion among the cheaper class of workmen's houses. As a matter of fact 11 per cent. of the houses under £4 are empty, and even many of the farmed-out houses are suffering from lack of lodgers.

It will perhaps be something of a shock to Glasgow ratepayers to learn that the Corporation's building speculations show a worse result as regards letting than the average of the city. According to the detailed accounts for 1905-6, the unlet rental in the completed properties held by the City Improvement Trust and the Statute Labour Department, was more than £7,600 or about 12 per cent. of the total. Last year there was not much improvement, the empties representing £7,300. There is here, surely, an experience which should deter our representatives from employing the city's funds and pledging the ratepayers' credit in further building schemes where the return is so uncertain and speculative.

It is only right to say that the business premises in the Corporation properties appear to be much worse let than the houses, but throughout the city, generally, while unsatisfactory houses in the slums still retain a fair proportion of tenants, good cheap houses are standing unlet. In the properties belonging to the Glasgow Workmen's Dwellings Company, for example, fully 9½ per cent. of the rental was unlet during the year ending 30th June, 1907.

Reverting to the proportion of unlet houses under £10 rent, namely, 8½ per cent., this is approximately equal to one-twelfth of the whole. That is to say one house in each tenement containing 12 workmen's dwellings represents the average of the empties.

One house unlet out of twelve might perhaps be borne with equanimity, but where the empties are above the average it is only natural that the owners of such properties are inclined to be disgusted with their investments. I think, however, that as in many other forms of investment, the fall in the capital value of property is greater, and the market more rapidly neglected than the mere shrinkage of revenue would seem to warrant. Letting generally is not so bad as it was in 1881-2, but the public market transactions in property for the past two years show a decrease in volume compared with 1881, and a falling off in the prices realised.

I have endeavoured to put together a short table to illustrate this. (Table III.) The table gives what I consider to be the purely investment purchases of house and shop property in the Faculty Hall, as reported from week to week in the "Glasgow Property Circular."

TABLE III.—Public Sales in the Faculty Hall as reported in the "Glasgow Property Circular" and the "Property Index."—Tenements of Houses and Shops—"Investment Lots" in Glasgow and District.—

Year.	Number of Transactions.	Total Price Realized.	Average Years' Purchase of Rental.
1872	75	£177,540	14·3
1876	73	234,295	17·0
1881	58	148,292	13·5
1886	67	140,935	12·8
1891	132	338,069	13·0
1896	192	580,695	14·1
1901	111	415,660	14·9
1906	41	100,400	13·0
1907	40	84,085	12·1

In calculating the years' purchase of rental, the ground burdens (if any) have been added to the above mentioned prices at 20 years' purchase. The results are given in several different years, and the contrast between the average price of 17 years' purchase in the year of great speculation, 1876, and 12·8 years' purchase ten years later, is worthy of note. There is not so marked a difference when the rates of 1896 and 1901 (periods of legitimate prosperity) are compared with the last two years, 1906 and 1907. It should be emphasised too, that the difference between the rates of 14·9 years' purchase in 1901, and 12·1 years' purchase in 1907, does not altogether represent a relative fall in value. The latter rate is of course much lower than what is still got for good modern property. The reduction on the average price is partly due to the fact that last year public sale transactions were more largely in an inferior class of property. Even without that modifying factor, it is doubtful if the capital value of tenement property has suffered more or even as much in the way of depreciation as other securities over the past 10 years.

The most striking feature of the table is the great diminution in the volume of public sales during 1906 and 1907, as compared with 1891, 1896 and 1901. This is not altogether a matter for disappointment. A reasonable explanation is that although buyers are not so plentiful as they were a few years back, the purchasing of property then was on a fairly prudent basis, and not on an extravagant one as in 1876; consequently investors generally are not being compelled at present to force their properties on the market to meet pressing obligations, but are holding on, and looking forward to better times returning soon.

The public sales in the Faculty Hall, of course, only represent a fraction of Glasgow's property transactions, but I have no doubt that private dealing shows a large, if not a corresponding diminution in volume during the past two years.

The man who "builds to sell" must, therefore, exercise caution when customers are scarce.

Table IV. shows how the varying demands of the occupier and investor have been met by the builder.

Mr Nisbet, the Master of Works, has been most obliging in giving me a memorandum of all the linings granted in the Glasgow Dean of Guild Court, from 1872 down to the present time, the returns thus embracing 35 years. From the returns I have constructed the table to show the number of houses provided each year, with a close approximation of the number of rooms. The average number of rooms per house is calculated, and in order to give an idea of the average cost per apartment, the estimate of value made up by the liners of the Dean of Guild Court is also stated. Some criticism may be offered as to the reliability of this last estimate, as it is not possible for the liners to obtain sufficient information from the plans alone to give more than a very rough idea of the cost. Nevertheless, from the test to which I shall afterwards refer, I am satisfied that the relative estimates of value are of sufficient importance to include in the table, and to form the basis of certain comparisons.

The total number of houses sanctioned by the Dean of Guild Court (and it may be assumed that nearly all of those have been built), has been 90,316 during 35 years, that is practically half of the 180,000 houses presently existing in the city.

The 90,000 sanctioned by the Court, however, do not represent all the houses in Greater Glasgow which have been built within 35 years. In the districts annexed from time to time there were between 20,000 and 30,000 houses, most of which have probably been erected within that same period. The result may, therefore, be put very broadly and approximately, that out of 180,000 houses, over 100,000 are not more than 35 years old, and very many of them are much "younger."

These numbers do not square with the figure of 103,000 houses existing in the old city at the census of 1871. The discrepancy, however, is largely, if not entirely accounted for by the fact that a great number of houses have been demolished by the operations of the City Improvement Trust, the different railway companies, and others, during the past 35 years, and these houses have been mostly of the older class.

On the whole it is a matter of satisfaction to the citizens to know that so large a proportion of Glasgow's house accommodation may at least be characterised as "comparatively modern."

The outlay on houses since 1872, approaching 20 millions sterling, is no inconsiderable item in the trade and prosperity of the city. That, of course, does not exhaust the enterprise of the builder. Another 20 millions of money has been spent in the same period on the erection of business premises, public buildings, etc. To accommodate the additional buildings about 81 miles of streets have been sanctioned, or nearly 25 per cent. of the total mileage of Glasgow streets.

The average size of house provided by the builder over the 35 years is 2·38 rooms. This is less than the census average of 2·584 over all the occupied houses in 1901, but a broad survey of the table indicates that the class of house built during recent years shows a general improvement over that of 35 years ago.

TABLE IV.—House Building in Glasgow for 35 years.

Dean of Guild Court Linings.

YEAR.	No. of Houses	Estimated No. of Rooms.	Average Rooms per House.	Shops.	Value of House and Shop Linings.		Value of all Linings.	New Streets. Length in Yards.
					Total.	Per Apartment.		
					£	£	£	
*1872-3	4 463	8,707	1·95	532	668,950	68	1,210,514	3,608
1873-4	4,392	9,448	2·15	508	707,300	68	1,335,300	2,662
1874-5	5,582	12,505	2·24	841	1,258,850	89	1,826,150	4,520
1875-6	5,746	13,783	2·40	899	1,268,500	81	2,125,249	2,585
1876-7	3,963	8,552	2·16	879	1,026,130	100	1,564,360	3,536
1877-8	1,033	2,412	2·33	120	222,320	84	755,717	2,265
*1878-9	501	1,327	2·65	52	93,000	65	431,970	25
1879-80	492	1,487	3·02	22	105,350	69	355,430	*Nil.*
1880-1	419	929	2·22	28	77,100	78	307,640	*Nil.*
1881-2	512	1,299	2·54	7	90,000	69	378,690	391
1882-3	391	1,013	2·59	19	88,650	84	594,943	1,272
1883-4	587	1,347	2·29	27	101,250	72	697,005	125
1884-5	764	1,676	2·19	33	128,650	74	349,015	295
1885-6	1,262	3,104	2·46	52	208,050	65	394,540	1,094
1886-7	1,021	2,424	2·37	79	174,450	68	424,730	718
1887-8	1,202	2,535	2·11	85	196,050	72	390,320	622

1888-9	1,545	3,493	2·26	54	249,900	69	685,520	1,193
1889-90	1,253	2,546	2·03	72	180,400	67	427,760	340
1890-1	1,561	3,555	2·28	126	293,600	77	590,810	794
*1891-2	2,051	5,285	2·58	100	457.750	83	917,930	3,151
1892-3	2,573	6,539	2·54	121	538,350	79	1,330,680	8,072
1893-4	3,466	9,066	2·62	123	785,950	84	1 275,445	8,730
1894-5	3,497	8,616	2·46	170	691,310	77	1,467,235	7,257
1895-6	3,370	8,049	2·39	277	708,390	82	1,290,400	8,617
*1896-7	4 870	10,901	2·24	235	997,385	88	1,865,855	5,072
1897-8	5,618	13,126	2·34	292	1,240.410	90	2,106,760	10,302
1898-9	3,730	8,635	2·32	196	926 385	103	2,017,330	9,262
*1899-1900	2,536	6,264	2·47	179	649,367	98	1,900,428	5,722
1900-1	2,446	6,471	2·65	114	678,574	101	1,559,294	5,264
1901-2	5,349	14,407	2·69	271	1,458,710	98	2,549,698	11,720
1902-3	4,837	12,599	2·60	96	1,405,589	110	2,260,773	11,683
1903-4	2,894	7,044	2·43	118	621,400	85	2,118,800	5,891
1904-5	2 085	5,454	2·62	168	566,241	98	1,303,502	3,018
1905-6	2,863	6,641	2·32	162	635.352	91	1,440,387	7,345
*1906-7	1,442	3,782	2·62	51	374,680	96	898,105	5,461
Totals for period of 35 years.	90.316	215,021		7 108	£19,874,343		£41,148,285	142,612
	Average Number of Rooms per house for whole period, - -		2·38	Average Value per Apartment, - - - -		£87		Equal to 81·03 miles.

* City Boundaries extended.

Those who are familiar with the different classes of Glasgow houses would interpret the table by saying that while the average requirement of the Glasgow citizen in the early "seventies" was met by a plain and probably inferior room and kitchen house, his standard of comfort now demands a bathroom and a scullery in addition. That is perhaps understating the position, because in recent years those adjuncts have been largely provided, and the returns do not discriminate in this respect. We have reason, I think, to congratulate ourselves on the improvement.

In dealing with the topic of a higher standard of living accommodation, reference should be made to a gratifying feature of modern house building in Glasgow and neighbourhood. That is the provision of small self-contained dwellings of three to five apartments which are being erected, and purchased by thrifty tradesmen and other people of moderate means for their own occupation. Comparative local statistics are not available, but I have no hesitation in saying that the recent development in this direction has been very great. Indeed "enormous" would be perhaps a more appropriate adjective when one considers what is taking place in the outskirts as well as in the suburban and semi-suburban districts of a city like Glasgow. No doubt this is largely fostered by building and other societies who readily grant loans to purchasers, and by builders who are prepared to take payment by instalments.

There are, of course, some objections to those expedients, but the disadvantages would require to be very great to counterbalance the advantages of extended house-ownership. Ownership involves a sense of responsibility, besides providing an investment for small savings. Thrift is encouraged, and indeed saving is almost compelled, when instalments have to be met or repayments to lending societies become due.

The latest published returns from building societies give the amount secured by mortgage in the United Kingdom as exceeding £51,000,000, and the annual sums at present being granted as between eight and nine hundred thousand pounds.

It is doubtful if Glasgow participates in a fair share. That arises partly from the fact that the canny Scot is not so easily lured into membership of building societies by specious promises which some of them are unable to fulfil.

The tenement system is, of course, not conducive to the extension of small ownership; and there is the further discouragement arising from the circumstance that if a cottage or self-contained dwelling comes to be let, a tenant can seldom be got to pay a remunerative rent, that is, a rent which will give an adequate return on the cost.

In Scotland the general experience is that the cost per apartment in a cottage or small terrace house is as great, if not greater, than in a tenement house. In England it is much less, but many economies are practised there which would not be permitted by the authorities, nor approved by the occupants in this part of the country. The climatic conditions here (not only of temperature, but those arising from dampness and lack of sunshine) necessitate a more expensive construction of walls and roof. The style of internal finishing adopted south of the Border does not in its detail satisfy our critical countrymen, and is apt to be rejected by them, both as owners and occupiers, as jerry.

Altogether the construction of cheap, serviceable, and fairly substantial cottage dwellings is one of the Glasgow builders' and architects' problems, and has not by any means been neglected recently. Much remains to be done, but local authorities must co-operate by easing their building regulations as far as possible, and the public must support the builder by their appreciation of self-contained houses. This can be expressed most forcibly by their willingness to pay a rent commensurate with the cost of a self-contained dwelling, which is without doubt superior to a tenement house of the same size.

If rents and costs of cottage dwellings in Scotland came more nearly into line, such properties would likely be more extensively acquired by investors as well as by occupiers, and builders would not be slow in meeting or even anticipating an increased demand.

This brings us naturally to the question of building cost and its fluctuations. The column of Table IV. giving the average value per apartment indicates a very wide range at the different periods. It is interesting to consider those figures in the light of the wages earned by the operatives in the building trade, as well as to contrast them with the volume of work done.

As already stated the average cost per apartment given in the table can not be considered to be more than an approximation, and no doubt it varies with the predominating character of the houses erected in any particular year. But the broad divergences of cost are not explained by inaccuracies of estimation, nor is the varying character of the average house a sufficient reason for the outstanding differences.

We start with the cost per room at £68 in 1872, when the wages of masons, for instance, were 7d. per hour. The cost mounted rapidly to £100 in 1876-7, and the masons shared in the great activity of the trade by earning 10d. per hour. There was the collapse in 1878-9 to £65, when wages fell to 6d., and the gradual rise through the "eighties" and "nineties" past £70 per room, when wages were at 7d., up to £90 and £100 again, with wages at 9½d. It would therefore seem that when 1d. per hour was added to or taken off the wages, concurrently the cost per room roughly was increased or diminished by £10.

This is not by any means an unreasonable conclusion when we remember how large a proportion of the cost of building is expended on labour. The apportionment of cost between labour and material is often, I think, erroneously stated at about half and half. One is apt to think of labour as being only that applied to the building operations conducted on the site. This is incorrect. For instance, where stone is concerned, quarrying and carrying are represented by wages, while the felling of timber, and the mining and manufacture of metals, etc., etc., should all be properly included under the heading of labour. In short, the price of *raw* material used in building forms a very inconsiderable item in the cost, and it is not surprising that the expenditure upon wages really rules the fluctuations of the cost per apartment.

The varying annual volume of house property built is of course dependent upon how it is taken up by tenants. The comparison of Tables II. and IV. illustrates this obvious fact.

The number of *occupied* houses in 1903-4 was 161,606, and the new houses built the previous year 4,837. In the year following the occupied houses had only increased by 495, while the empties had been augmented by 3,562. Can it be wondered that the annual supply of new houses fell at once from 4,837 to 2,894? And, seeing that the empties are still increasing, it is not astonishing that the new houses provided last year only numbered 1,442.

I think that the builder, while quite equal to any demands for increased accommodation, speedily puts on the brake when he sees the necessity.

Last year the estimated increase of Glasgow's population was only 3,700 or thereby, although the excess of births over deaths was 9,506, so that apparently the city lost about 5,800 of its inhabitants by removal. This loss is not confined to last year, because the population of Glasgow, according to Dr Chalmers' more correct estimate based on occupied houses, falls short of the Registrar-General's estimate, or rather expectation, founded upon the last census increase by about 40,000.

There are at present say 16,000 empty houses in Glasgow, which would give accommodation for 60,000 to 70,000 people. Had the Registrar General's expected increase of population been maintained, however, and trade generally continued brisk, about 10,000, or two-thirds, of the empty houses would have been required, and only a normal surplus would have been unoccupied.

Not even the most inspired prophet in the building trade could have foretold the extent of the exodus from the city to the suburban burgh of Clydebank and Dalmuir, or predicted the tide of emigration to Canada and elsewhere, both of which have largely depleted Glasgow's houses of their tenants.

Let us hope that the outflow will now cease. Even with the population simply maintaining the rate of natural increase without loss, it will take about 5 years to refill the surplus houses without any new building at all.

From the point of view of the occupier as well as of the owner, some statistics of the city's rental, both in the gross and on the average, are worth considering.

The total rental of Glasgow as extended was in 1907 just about double what it was in the old city 31 years previous. Six of the annual returns within that period, namely, 1881, 1882, 1885, 1886, 1887, and 1888, showed decreases in the gross amount, but all the other years showed increases. It would be rather a laborious task to calculate the average rent per house each year, but in Table II. these figures are given at intervals. In 1871, the average rent of all the Glasgow houses was a little over £10, while now it is more than £14. These figures, however, do not represent the price paid for the same article, as the size of the average house has increased in the interval. Consequently, the comparison given in Table I. of the average weekly rent per room at the different census periods is a more instructive one.

The average weekly rent per apartment has increased from 1s. 8¼d. in the old city in 1871, to 2s. ½d. for the extended city in 1901, and I estimate that the figure for 1907 should be about 2s. 1d. The rate for greater Glasgow in 1891 was 1s. 11¾d., but for the old city it was only 1s. 9½d. The difference is accounted for by the superior houses in the annexed districts. The reduction in rents of dwelling-houses between 1881 and 1891—shown on the table by the average figures of 1s. 10¼d. and 1s. 9½d.—must have contributed substantially to the diminution of the old city's rental prior to the annexation of 1891.

The subsequent increase in greater Glasgow from 1s. 11¾d. in 1891, to say 2s. 1d. to-day is not great, bearing in mind the improvements in the newer houses, the augmented cost, especially of labour, and the substantial addition to the owners' rates and taxes.

In order to establish a sort of link between the cost of building and the rental charged, Table V. has been prepared.

TABLE V.—Cost and rental per apartment in 73 tenement properties recently erected in Glasgow and suburbs:—

Number of houses (from 1 to 8 apartments),	720
Number of apartments,	1801
Average number of apartments per house,	2·5
Average annual rent per house,	£16 17 6
Average rent per apartment,	£6 15/ yearly or 2/7 weekly.
Actual ground rent or cost of land per apartment,	9/9 yearly or 2¼d weekly.
Cost of building per apartment,	£92

Owners' annual payments per apartment:—

Owners' rates, about	£0	14	0	yearly	3¼d	weekly.
Upkeep, management, insurances, etc.	1	1	0	,,	4¾d	,,
Ground rent,	0	9	9	,,	2¼d	,,
	£2	4	9	,,	10¼d	,,
Average loss from empties, allow	0	7	0	,,	1½d	,,
	2	11	9	,,	11¾d	,,
Balance,	£4	3	3	,,	1/7¼d	,,
Total Rent,	£6	15	0	,,	2/7d	,,

NOTE:—The balance is equal to about 4½ per cent on the cost of building at £92 per apartment. If fully let the return may reach 5 per cent.

This table gives, in the first place, the average cost of 1,800 apartments in *new* properties, which I have taken pretty much at random from those examined by me during the past few months. The average size of house at 2·5 rooms coincides closely with the census average in 1901, as well as with the average of those built in 1905-1907. The average cost per apartment is calculated upon the actual sums expended, or upon estimates made with a close approximation to accuracy. The figure of £92 is virtually the same as the average of the Dean of Guild Court linings for the past two years.

The average rent of these new houses at 2s. 7d. per week is naturally above the average of 2s. 1d. for the whole city old and new. The latter part of the table gives an analysis of the elements which make up the rent. The comparison of the actual price of the ground—2¼d. per week—contrasted with the proportion of rates paid by the owners—3¼d.—is perhaps instructive in view of recent discussions upon the subject. Glasgow citizens need hardly be reminded that the additional proportion of municipal and parochial rates paid by the tenants direct, represents roughly about 6½d. per apartment per week, making a total payment of say 9¾d. for the advantages provided by our local administration.

In conclusion, the table shows that after providing for the payments by the owner, and allowing for the loss from empties, the average rent will only yield 4½ per cent. on the average cost. This is not a large return from an investment which possesses in some degree the element of uncertainty. Unless it can be at least maintained, there is not much encouragement for the builder to proceed.

In recent years, the supply of cheap money for investment in bonds as well as in the feu-duties and ground annuals created by the builders, enabled them to carry on their operations at a reasonable profit in spite of advancing costs. It is not generally realised that the effect of the creation and sale of ground rents is in the direction of keeping rents down. I have made a calculation to ascertain the extent of this. The result is that if the builder is prevented from adopting this method of obtaining cheap capital, he will require to charge an increase of about 7 per cent. on the present rents to put himself in the same position as before.

These advantageous transactions, however, have been seriously hampered by the terms of the Report of the Select Committee of the House of Commons on the Land Values Taxation, &c. (Scotland) Bill. The proposal which the Report contained to subject ground rents to local taxation naturally stopped the flow of cheap money into those most reliable investments. No investor would buy on a 3¼ or 3½ per cent. basis with the uncertainty of varying taxation looming ahead, and the Premier's tardy pronouncement that the inclusion of existing ground rents in a scheme of rating would not be sanctioned by the Government has scarcely yet restored confidence.

Other legislative proposals presently put forward to deal with the incidence and collection of taxation and to control the bargains of owner and occupier may be in part sound and just, but amongst them are ill-considered and unfair suggestions which cannot but have a disquieting effect upon the minds of investors.

In the face of this, and of the surplus of empty houses, the Glasgow builder has no option but to lay down his tools for a time. Let us hope, for the sake of the workmen, that the interval of rest will not be of long duration.

From the point of view of the occupier, it may be asked, is there any likelihood of a substantial and permanent reduction of rents?

Some shrinkage during the past three years, when the number of empty houses has been increasing, is only to be expected. The reduction on the average house rent over all the city, however, is slight, being from £14 4s. 10d. in 1905 (the highest average yet reached) to £14 3s. 2d. in 1907. The general experience has been that the reduction is greater, but it has to be remembered that the absolute reduction is counteracted by the annual addition to the city of new houses above the average, and the disappearance of old ones probably below the average.

Reductions have been made by owners not because the cost of production is less, but under the competition to obtain tenants. Such reductions, however, can only be regarded as of the nature of a temporary fluctuation. The diminished rents are not sufficiently remunerative to the builder at present prices, and when the empty houses fill up, the tenant will again require to pay such a rent as will yield a fair return upon the cost of erection.

As the principal element of cost is the price of labour, any drastic and permanent lowering of rents would mean a lowering of wages, and I am sure that no one desires the workmen's rate of pay to be reduced. The sums for owners' rates and for upkeep are likely to increase rather than diminish. Any possible variation in the cost of the ground will not appreciably affect the total rent.

A favourable money market and the guarantee of stability in heritable investments on the part of the legislature will be necessary to ensure the continued employment of cheap capital in building and property owning.

One looks to improvements in the use and application of materials and to developments of organisation to counteract the increasing cost due to the improved equipment of houses which is now expected and demanded by tenants. The more extended employment of machinery in the preparation of materials is one of the features of modern house building tending towards economy. In the matter of organisation, the co-operation of the different tradesmen in joint speculations of tenement building has certainly led to increased production if not to cheapness.

On the whole, however, there seems to be no direction in which the eventual cost to the occupier can be largely reduced. The figure of average weekly rent at 2s. 1d. per room may therefore be taken as one which is not likely to diminish appreciably, when the new houses require at least 2s. 7d. to meet the cost.

It comes to this, that in order to provide his family with decent house room, and not to exceed the limit of two persons per apartment, a man must pay about 1s. a week per head for rent with another 3d. per head for taxes. The standard set of two persons per room is not high, and in my opinion should be aimed at as the minimum. Poverty, no doubt, causes many to fall short of this standard; the family income is frequently too small even to provide sufficient food and clothing without paying anything at all for rent, which is the first thing economised. Part of that poverty is due to early improvident marriages where very young couples undertake the responsibilities of family life without the means or the prospects of fulfilling them, but I fear that in other cases the expenditure on luxuries very often takes the place of a much-needed extra outlay upon house room. The amount spent upon alcoholic refreshments in comparison with house rent may be taken as an example of what I mean.

In three of the city wards which are practically working class districts in their entirety, I have made an approximate estimate of the dwelling-house rental. I have also ascertained the numbers of the public-houses (exclusive of licensed grocers) and the assessed rents of these. Adopting a very modest estimate of the drawings, I am satisfied that the amount spent in the public-houses represents at least *one-and-a-half times* the money paid in house rent. I know that this is well within the mark because the estimated annual expenditure on drink per head of population which I have adopted is considerably less than the average of £3 3s. 1d. per annum which was given for the whole of Scotland for the year 1906. Think what this means. If one-third of the outlay on drink were diverted to pay rent, an increase of 50 per cent. on the average house accommodation would be afforded. For example an overcrowded room and kitchen house could have another bedroom added, and a reasonable refreshment would still remain to the head or heads of the household.

No one, of course, would be foolish enough to assert that this is more than a partial explanation of the paradox that overcrowding and overbuilding can exist in the city at the same time. But it is an important factor. Probably more than 400,000 people are living in Glasgow just now under conditions of more or less overcrowding, while surplus accommodation exists for about 60,000 or 70,000. The population either cannot or will not take advantage of the spare house-room, and the building trade is in a state of stagnation.

Percentages and averages may seem cold comfort to offer, but it is with all sympathy for those who are passing through dull times that I have ventured to submit for consideration those statistics and the conclusions I draw from them.

When the next wave of prosperity and increasing population overtakes the city, let us hope that builders and owners will share the benefits and still be able to offer healthy houses to occupiers at a minimum of cost.

Heusler's Magnetic Alloy. By ROBERT JACK, M.A., B.Sc., and ALEXANDER D. ROSS, M.A., B.Sc.

[Read before the Mathematical and Physical Section, 29th January, 1908.]

IN 1903 Heusler discovered a magnetic alloy of manganese, aluminium, and copper. Though this was previously unknown, the results of several experimenters pointed towards it. Quincke and others had shown that the susceptibility of the solutions of manganese salts was greater than that of iron salt solutions ; and Hogg[1] had also proved that though ferromanganates were not magnetic, yet on combining with aluminium a magnetic alloy was obtained. The peculiarity of the properties of the alloy, and the difficulty of their explanation has aroused considerable interest.

In Vol. xxxvii. of the *Proceedings* of this Society an account is given of a preliminary investigation of a sample of the alloy which was carried out in the Physical Laboratory of Glasgow University. The following series of tests have now been made on rods cast by Messrs. Steven and Struthers. The composition of the specimens is 25 per cent. manganese, 12·5 per cent. aluminium, a trace of lead, and the remainder copper. Here manganese and aluminium are in equal atomic proportions. Heusler found that this composition gave the best results.[2] Manganese and aluminium alone will give a magnetic alloy, but the lead and copper make the substance more workable.

The tests were made by the magnetometric method, the sample being placed in Gauss's A position. To compensate the effect of the magnetising coil another coil was placed in the same circuit, the current passing through the two in opposite directions. The first coil was placed so that equal deflections were obtained on reversing, and then the compensating coil was inserted and adjusted so that for the maximum current to be used there was no alteration when the needle was in the null position or when held deflected by a magnet. Before putting a specimen through a cycle it was always completely demagnetised by the method of reversals.

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[1] Chem. News, 66, 140, 1892.

[2] Verh. d. D. Phys. Ges., 12, 1903.

With a view to testing the apparatus, preliminary I-H cycles were taken with a rod of the alloy about 60 cms. long and 1·30 cms. in diameter. It was tested in the condition as supplied by the makers, the casting being simply "dressed" and the ends cut square. A portion about one-third the length of the original rod was cut off and retested. The correction for the effective lengths, and that for the demagnetising force due to cylindrical specimens investigated by Du Bois were applied in calculating. This same part was next ground to an elongated ellipsoid of revolution, for which corrections can be made much more accurately, and again tested. The results obtained for all three were in good agreement. The alloy in this normal state exhibited very little hysteresis, the coercive force being only 1·2 gauss, and the saturation point was well marked. For H = 150, I was 325.

To avoid difficulty regarding effective lengths and the demagnetising force of the specimens, elongated ellipsoids of revolution were now in general employed, Ewing's demagnetising factor being used. To give the specimen this form was a difficult task as the material was very brittle and so hard that it could not be turned. It was found necessary to grind it on emery. A specimen so prepared was subjected to thermal treatment. After being taken through a cycle (Fig. 1 curve 1) it was heated for ten minutes to 50° C., slowly cooled, and retested. No change in magnetic quality was observed. Successive heatings were then made to 100° for a few minutes, to 100° for two and a half hours, and to 145° for a few minutes. In each case the specimen was slowly cooled and tested at the room temperature before proceeding to the next heating. So far the magnetic quality was little affected. The specimen was now baked at a temperature of 160° for three days. This produced a distinct improvement in quality (Fig. 1, curve 2). The process of heating for short and long periods was continued step by step. The magnetic quality showed gradual deterioration with a marked increase in hysteresis. Fig. 1, curve 3, shows the final state which was obtained after heating for two and a half days to 220° C. In the heating up to and including 160° a gas furnace was employed, but for prolonged heating at higher temperatures an electric oven was constructed and found to give very steady temperatures. In all the experiments the temperature was measured with a platinum and platinum-iridium pyrometer. The series of heatings proved that the time effect is very large, especially in regard to the increase in hysteresis.

Another ellipsoidal specimen was employed in an investigation of the permanent effects produced by bringing the alloy for a short time to a series of increasing temperatures and quenching thereat. But before this treatment was carried out the magnetic condition of the specimen was tested both while the temperature was that of liquid air and after the normal temperature had been resumed. The specimen was enclosed in a glass tube which fitted into a cylinder of asbestos placed inside the magnetising solenoid. One end of the glass tube was closed, the other was open and bent up so that the tube could be kept filled with liquid air. The curve (Fig. 2, curve 2) obtained when the specimen was thus cooled to —190° C. showed an increase of about 25 per cent. in the saturation

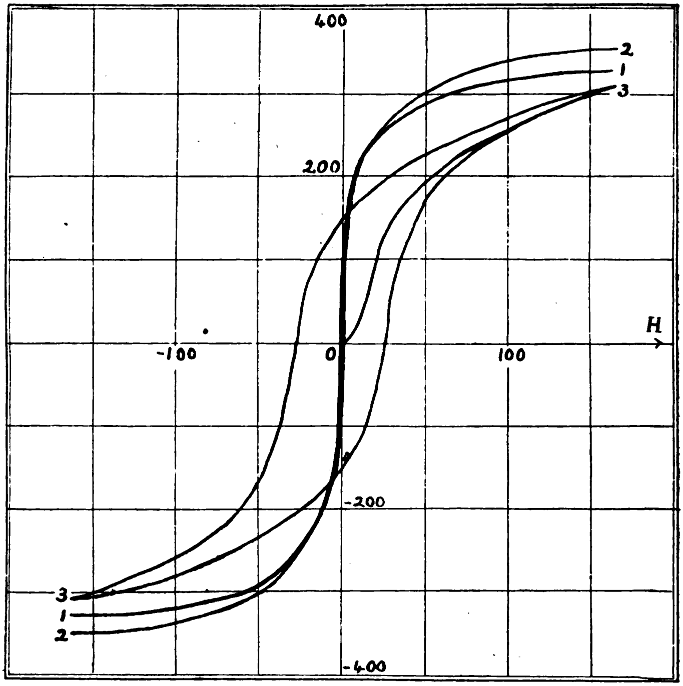

FIG. 1.

value of I, but otherwise did not differ materially from that obtained at the room temperature (Fig. 2, curve 1). The effect on the magnetometer due to the liquid air being magnetic was quite negligible. On retesting the specimen when it had warmed up to normal temperature it was found that the improvement had been only temporary.

The specimen was now heated to 400° C. and quenched by plunging vertically into cold water. The magnetic quality was somewhat destroyed by this treatment, and there was a decided diminution in hysteresis (Fig. 2, curve 3). Immersion of the quenched alloy in liquid air produced a temporary increase of over 30 per cent. in the saturation value of I, with a slight augmentation of the hysteresis (Fig. 2, curve 4). The specimen was laid aside for nearly ten months, and in this interval almost recovered its original susceptibility, while the diminution in the hysteresis which had been effected by the quenching was only reversed to a very slight extent.

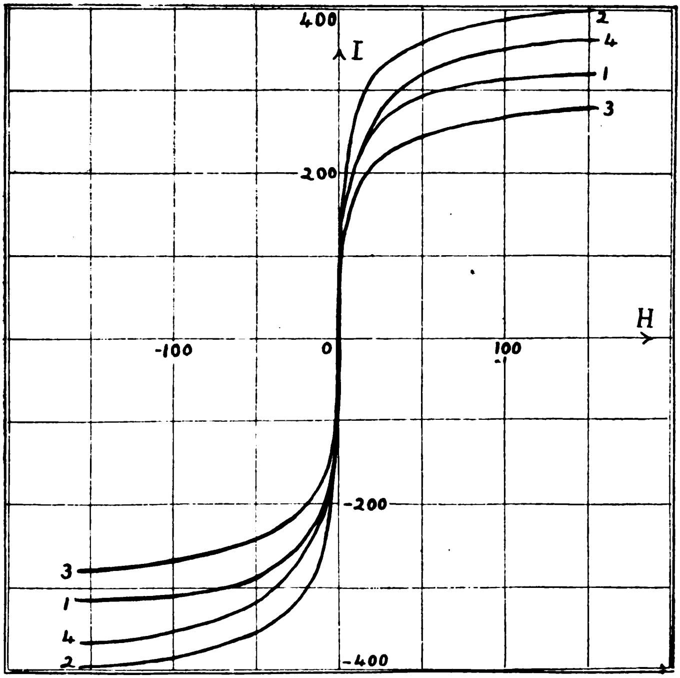

FIG. 2.

The quenching tests were again resumed and cycles obtained for the following series of temperatures: 400°, 450°, 500°, 555°, 610°, 660°, 712°, and 745°. At each stage three tests were made: (1) with the quenched specimen, (2) with the specimen immersed in liquid air, and (3) with the specimen back to atmospheric temperature. Fig 3 exhibits the nature of the results obtained in this investigation. The abscissæ represent the temperatures of quenching, and the ordinates give the permeability corresponding to a field of 20 C.G.S. units for the specimen in the quenched condition. The lower curve shows the values obtained in the cycles at ordinary temperature; those obtained with the specimen in liquid air are shown in the upper curve. It will be noticed that there is a very marked diminution in permeability on quenching at 610°, and on quenching at higher temperatures the quality is to a considerable degree restored.

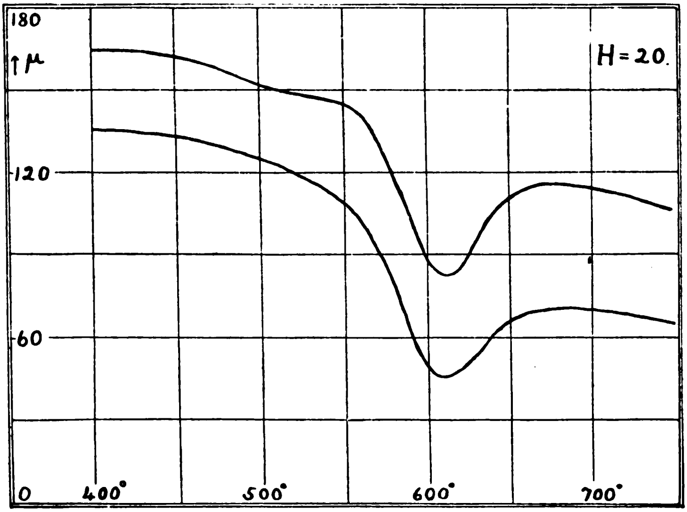

FIG. 3.

Throughout the investigation there were traces of cracking in the specimen due to the quenching, and this would probably affect the magnetic tests to a slight extent. While being heated in the furnace preparatory to quenching at 800°, the specimen broke in two. An examination of the sections of fracture showed that a decided change in constitution had taken place. Originally fairly homogeneous, if we except the presence of a few small "blow-holes," the alloy now exhibited at least two constituents—large, irregular, and lustrous nodules appearing imbedded in the more uniform matrix. To such changes in structure we may probably ascribe the peculiar behaviour on quenching at 610°. A cylindrical specimen has been tested in a similar manner at the temperatures 500°, 600°, 700° C., and confirms the anomalous change in the permeability illustrated in Fig 3.

SUMMARY OF RESULTS.

1. In the normal condition hysteresis is small, and saturation well marked.
2. If the alloy is baked at gradually increasing temperatures the magnetic quality gradually improves till 160°C. is passed, and then deterioration sets in with marked increase in hysteresis ; the time effect seems to be very large.
3. Immersion of the specimen in liquid air improves the magnetic quality most, but a return to normal temperature is accompanied by a return to the former state.
4. Quenching lessens the hysteresis, but with increasing temperatures gradually destroys the magnetic quality. When 610°C. is reached, however, the permeability ceases to fall, and there is a well-defined minimum at this point.
5. There is a gradual return extending over a very long period to the condition at the normal temperature, which seems to be the stable one.

The above research has been carried out in the Physical Laboratory of the University of Glasgow, and the authors desire to express their thanks to Professor Gray and Dr Muir for their keen interest in the work and suggestions received during its progress. The part described in the first seven paragraphs was done by Mr Jack assisted by Mr Ross, while the remaining part was done wholly by the latter.

Don Quixote. By WILLIAM PATON KER, M.A., LL.D., Professor of English Literature, University College, London.

[Read before the Society, 31st January, 1908.]

I MAY be allowed to thank this Society for the honour they have done me, and especially for the opportunity of meeting some old friends, and of acknowledging some old debts to my native town. Before beginning on my proper subject, or speaking directly of Don Quixote and his books of chivalry, I should like to make mention of some things that are commonly ignored or forgotten by strangers in their estimate of Glasgow. Glasgow has a larger share in romance and romantic tradition than most people recognise; though they have the salmon and the ring in the City Arms to remind them. St. Kentigern, according to some authorities, was the son of Owain ap Urien Rheged, who is called Uwain by Malory; son of Urien, King of Gore, and of Morgan le Fay; Owain, the hero of the beautiful Welsh story *The Lady of the Fountain*, the Iwain of Chrestien de Troyes and Hartmann von Aue, and of the English romance called *Ywain and Gawain*. St. Mungo is mentioned in one of the old French chivalrous poems, the romance of *Fergus*, and the same book tells how Sir Percival himself in his wanderings came to the Forest of Glasgow.[1] One of the chief documents for the life of Merlin speaks of his appearance on the hill beyond the Molendinar burn, uttering his prophecies to St. Kentigern on this side of the stream.[2] One must not spend too much time in these reminiscences, but before I leave them I would return to the Molendinar valley, and ask whether any place has been more honoured by romance than this, the seat of St. Mungo. I am not thinking now of Merlin, but of the High Kirk as Francis Osbaldiston saw it, of the crypt on that Sunday, and of the warning of Rob Roy. There is an imaginative, a spiritual city of Glasgow to be found in the books of different romancers and historians; it is not all vanity.

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[1] La contree de Landemore
Trespasse tote sans arest,
Et puis s'en entre en la forest
De Glascou qui molt estoit grande.
—*Fergus* ed. Ernst Martin (Halle, 1872) ll. 182-185.

[2] *cf.* H. L. D. Ward, "Lailoken (or Merlin Silvester)," *Romania* xxii. (1893) p. 516.

In addressing a philosophical society one naturally thinks of consulting the philosophers; Hegel has given his opinion about Don Quixote, and with that I shall begin. It occurs in one of the liveliest passages of his works, the discussion of romanticism in the *Æsthetik.* One must remember the vogue of the German romantic school in Hegel's day, and also the strong foundation of Hegel's mind in Greek literature. Like Goethe, with whom he is in close sympathy, he is critical of the romantic ideas, and though he feels their attraction he is distinctly not of that party. Shakespeare and Cervantes command his respect; Cervantes through his likeness to Shakespeare. It is worth pointing out that the characters of Shakespeare named by Hegel are not those we should innocently expect from a philosopher. Falstaff is there, but besides Falstaff, Hegel mentions Stephano, Trinculo and Pistol as examples of Shakespeare's power. What he admires most in Shakespeare is what he admires in Dante and in Don Quixote; the strength of the individual character, the resistance of the character to all outward pressure. Like the people in Dante, like Don Quixote, these are each an intelligence, not argumentative machines (says Hegel) like the noble persons in classical French tragedy.

Don Quixote, in those lectures on literature, comes in after Ariosto; Hegel is interested in the exploding of medieval romance, and he is careful to show that both Ariosto and Cervantes, in making fun of chivalry, preserve the chivalrous essence under other forms.

"In spite of his comic aberration Don Quixote retains what we praised in Shakespeare; working in the spirit of Shakespeare, Cervantes has made his hero an essentially noble nature, endowed with a variety of intellectual gifts, never uninteresting. In his craziness he is always sure of himself, sure of his cause; or rather it is just this sureness which makes his craze. If he had not this unreflecting security as to his actions and their consequences, he would not be truly romantic, and this self-confidence regarding his aims and ideas is, all through, great and glorious with the finest touches of character. (1) The whole work is thus, on the one hand, a satire on romantic chivalry, charged with irony through and through, and thus different from Ariosto, whose pleasure in the maze of adventure is in comparison light and careless. (2) On the other hand, the adventures of Don Quixote are only the thread on which, in the most charming way, a number of really romantic tales are strung, as if to bring back in its true value what the rest of the story with its comic spirit has dissolved."

—Hegel, *Æsth.* II. p. 214.

I cannot find any other philosopher who speaks better sense than this. Dr Alexander Bain has some remarks on Don Quixote not always easy to understand, *e.g.* :—

"*The ridiculous is clearly overdone in the attack on the puppets ; but this passes as satire due to the author's abhorrence of the Moors. Otherwise, it is next thing to childish.*"

Bain says of Falstaff that "the delineation labours under a superfluity of grossness and coarseness except for the lowest tastes." Perhaps he meant this for Hegel ?

Hegel, I think we may say, is more satisfactory here than Bain, and more intelligible. He is also in disagreement with Byron ; he does not believe that Cervantes smiled Spain's chivalry away. This is one of the falsities of Byron ; he sometimes spoke without thinking, and when he said this about *Don Quixote* he was not thinking about Cervantes ; he had a point to make. Let us see how much value there is in it. It does not, of course, mean that Cervantes put an end to the old-fashioned chivalry ; the whole scheme of the book implies that the old chivalry has gone ; even the Landlord, who, as Dorothea says, is very fit to play second to Don Quixote in his love of romances, even the Landlord recognises that there are no real knight-errants now. It may be remarked here that Don Quixote was only about two hundred years too late ; the Knight in the Canterbury Tales had been an knight-errant, as we all know, and even very practical politicians, like Henry Bolingbroke, may go out on adventures against the infidel. But the fashion of the fourteenth century, the time of Chaucer and Froissart, was not that of the 16th—the older chivalry, which was a much more real thing than many people imagine, was gone, and the whole plot of the book means that it is gone.

If you take chivalry in another sense to mean simply high-flown notions of honour, then it is equally untrue and absurd to say that chivalry was exploded by Don Quixote. The point of honour is more emphatic in the generation of Calderon than it was before; just as in England the cavalier ideal of Montrose's time is in many respects finer than the Elizabethan; "the love of honour, the honour of love" are wrought into a more piercing flame of inspiration in the seventeenth century. If chivalry means heroism, then I think we know where to find some record of it in Spain after the death of Cervantes. The greatest heroic picture in the world, I venture to think, is the *Lances* of Velasquez, the picture of the Surrender of Breda, in the Madrid museum. Velasquez is younger by two generations; and it is to him that we must go, to a Spaniard of the decadent age, to see in a picture, in the meeting of the conquering hero and his noble defeated adversary, what is meant by the poets when they speak of deliberate valour.

Byron had an incurable habit of preaching, and allowed himself to be carried away by his moral fervour at the expense of historical fact. The author who, according to Byron, is guilty of his land's perdition—smiling chivalry away, and all the rest of it—was the author of a play called *Numancia*, which was chosen to be acted in Saragossa during the siege by reason of its patriotic ardour. The experiment was successful in its effect on the spirits of the town; and the resistance of Saragossa, though it may not prove that the *Numancia* is a good play, at any rate shows that Cervantes was not always a discourager. Byron thinks *Don Quixote* was the saddest book. That certainly was not the author's own opinion about it. He thought it all very good fun.

Don Quixote, to begin with, is a literary burlesque; not a satire on chivalry, but a gibe at the ridiculous style and the poor common-place invention of the degenerate prose romances. Some people think of the book as if it were a modern democratic assault on the gentle castles of romance. It is not; the books of chivalry are the books of all the people; dear to the great heart of it. Everyone reads them; the curate knows all about them before he delivers them to the secular arm; Dorothea reads them, and talks their language when she is in the person of the Princess Micomicona. They are the Tales of my Landlord, as we know well from that familiar passage which has been more often printed than any other Spanish sentence in the world; and the books which the host would not allow to be "heretical or phlegmatic" were equally loved by his wife and his daughter, and by Maritornes as well. The first notable follower of Don Quixote, the English Knight of the Burning Pestle, is composed in the same fashion as his great original, and his chivalry is the chivalry and the romance that are understood by the Grocer's wife in London, and fitly acted by Ralph the prentice.

The literary and critical views of Cervantes have scarcely been enough appreciated, though he gives them plenty of space in Don Quixote and elsewhere. It is impossible to understand him without following his theory of poetry and prose, his opinions about the ideal and the actual. When you have followed them you will find that they leave you far short of the goal; but you cannot get on without them. *Don Quixote* is one of the largest and roomiest books in the world, a book that has been, to many readers, a revelation of everything that is meant by imaginative freedom; the delightful power of bringing real people before the mind. Yet this book, so much greater than any mere fine writing, was composed by a man who held strongly most of the literary superstitions of his time, whose original powers were in great part disabled, down to the end of his days, by literary conventions and formalities. What are the books on which he prided himself? *Don Quixote*, no doubt; but even more the *Galatea*; to the very last he kept hoping for the second part of the *Galatea*, a thing long promised, which he had never been able to complete. Now the *Galatea* belongs to one of the most hopelessly artificial kinds of literature, the Arcadian pastoral romance, compared with which the crudest book of chivalry is amusing and life-like. And his latest book, for which he wrote the wonderful preface only a few days before his death, is *Persiles and Sigismunda*, a romance of a kind that is only less artificial than the pastoral—an imitation of those late Greek rhetorical novels which had such an extraordinary influence on the men of the Renaissance. If anything is contrary to the spirit of *Don Quixote*, you would say it was the formal abstract perfection which was the ideal of the pastoral schools, the pure rhetorical beauty that so often in different ways made ruin of poetical originality after the revival of Learning. Yet those Idols were worshipped by Cervantes, who did more than any man, except Rabelais, to turn the opinion of Christendom against the formalists of literature, more than any man after Shakespeare to discredit the vanities of rhetoric, in all business where men and women are really interested. It is all very strange; perhaps one of the strangest paradoxes in history. It has been pointed out that Cervantes in his literary opinions is almost an echo of Sir Philip Sidney. They speak in the same amusing way about the popular drama of their time—one among many examples of the curious sympathy, long before there was any actual communication, between the literatures of England and Spain. There is the same chaffing of the popular dramatists, the same regard for the unities, and censure of the easy-going plays that paid no attention to the unities—"*Asia* on the one side and *Affrick* of the other," said Sidney, "and so many other under Kingdoms that the player when he commeth in must ever begin with telling where he is, or else the tale will not be conceived."

"What shall I say" (this is Cervantes in *Don Quixote*, speaking in the person of the Canon of Toledo, P.I. c. xlviii.), "What shall I say of their observance of time except that I have seen a play which began the first act in Europe, the second in Asia, and finished the third in Africa; if there had been a fourth it would have taken America." The Canon speaks also, just like Sidney, of the child in swaddling bands in the first act, reappearing as a bearded man in the second.

Sidney and Cervantes have the same respect for Heliodorus, the same conception of the perfect prose romance, the heroic romance, with ideal characters, full of edification, the epic poem in prose. Fielding picked up this idea (of the prose epic) from Cervantes long afterwards, and was fond of regarding his own works in this way; but Cervantes does not mean *Don Quixote* when he speaks of the prose epic, he means something much more like *Persiles and Sigismunda;* a dignified composition with ideal personages. Sidney's *Arcadia*, with its mixture of pastoral and chivalrous romance, is a counterpart of both the idealist works of Cervantes, the *Galatea* and *Persiles*, and anticipates the heroic French romance of the 17th century. Sidney, it may be remarked, though he did not write *Don Quixote*, yet shows in some of his sonnets that he had a sharp eye for literary vanity and false rhetoric; the paradox and contradiction between the rhetorical idealist and the ironical comic genius is not as extreme as in the case of Cervantes, but it is there, and of the same sort.

Sidney's essay on Poetry and its echo, the discourse of the

Canon of Toledo in *Don Quixote*, are among the evidences of the Renaissance—they prove that there once was such a thing (or force, or agency, or stream of tendency, or what not), and they show how the humanist ideas worked at times to the detriment of literature. Little good in the way of prose romances came from all this meditation on Achilles and Ulysses and Æneas, or from the attempts to reduce them to the service of modern novelists. The revival of learning meant for many years, and for a large part of Europe, the reign of empty and monotonous form; and the mutilation of many ingenuous minds through the tyranny of the barren ideal.[1] When the young man thinks first of the form of his great work, and goes looking about for stuff to put into it, we know what the result will be. Who can number the futile epics made according to receipt, the tragedies in blank verse, the odes written to fill up a pattern by well educated young men? The wind has carried them away. Does not one overhear the vulgar westland voice of Andrew Fairservice saying: "Poet! him a poet! Twa lines o' Davie Lyndsay wad ding a' he ever clerkit!"

There are some, it is true, who have got through with glory; Milton, all his life, was haunted by the empty shadows of the perfect Epic and the perfect Tragedy, like the ghosts craving for a drink of blood in the *Odyssey*; and Milton, as we know, was not defeated. His Epic and Tragedy had blood put into them, and they are still alive. But there are some very queer things in Milton's note-book, that seem to show how near he was to the danger of fruitless ambition, and his long list of possible subjects for a tragedy is just the sort of thing that looks like pretentious failure.

Cervantes also came through the ordeal, but in a different way from Milton. The formal ghosts never ceased to plague him; they came about his dying bed: "Where is that second part of the *Galatea*?" They interrupt his happiest hours, they pester his freest inventions; but they do not altogether gorgonise him. When he was not thinking about them he began the story of *Don Quixote*, and his greatest work escapes (not altogether, as we shall see) from the blight of the formalist ideal.

Don Quixote is one of the great chaotic books of the early modern age; it is not as reckless as Rabelais, but just for that reason, just because it is not consistently daring, it is more mixed and incongruous than the book of Pantagruel. Rabelais was quite untouched by those spectral ideal forms that came across the path of Cervantes; Cervantes is much less secure, and therefore perhaps more interesting.

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[1] *cf.* Alfred Jeanroy "Quelques réflexious sur le Quattrocento," *Bulletin italien* v. (1905) pp. 205-236.

Don Quixote is the most careless great work in the world. If it had come down from antiquity without a name or a date attached to it, it would long ago have been hacked to pieces and distributed by antiquarian commentators, by theorists on the growth of the prose epic, even as a piece of bread is cut up and stowed away when you put it down on an ant-hill. It might have a dozen different authors, besides interpolator A and interpolator B; and last of all the foolish Homer who cobbles the pieces together into an immortal work. Consider, for example, the second half of the first part; the adventures of the Sierra Morena and that which befel all Don Quixote's train in the Inn—a quarter of the whole completed book.

First of all there is the main action: Don Quixote's penance in imitation of Beltenebros (Amadis of Gaul)—Sancho Panza's embassy to Dulcinea—and the intervention of the Curate and Barber to bring Don Quixote home again.

Then there is the story of Cardenio and Lucinda, Don Fernando and Dorothea—a sentimental story with a definite plot, told partly in narrative by Cardenio and Dorothea, partly by Cervantes himself in the course of the day's work.

What is become of the play *The History of Cardenio*, written (according to the record) by Shakespeare and Fletcher? Did Shakespeare read that wonderful encounter between the steady logical madness of Don Quixote and the flighty shaken wits of Cardenio?

Don Quixote as the champion of the Princess Micomicona is brought back to the Inn which he took for a castle. Here it is scarcely possible to make out any chronology. No one goes to bed except Don Quixote; who fights with the giant in his sleep and cuts his head off, according to Sancho Panza's evidence; the landlord saw only his perforated wine-skins. This interrupts the reading of the *Impertinent Curiosity*—one of the Tales of my Landlord—with which the Curate, the Barber, Dorothea and Cardenio are engaged. The *Impertinent Curiosity* is one of the best of the short stories of Cervantes—a correct piece of writing, more Italian than Spanish—one of the tragical cases or problems which were a favourite theme for casuists in fiction long before Browning or Ibsen. Then, after this story is finished, appears Don Fernando with Lucinda and his attendants—a fair troop of guests: *gaudeamus*, says the landlord; and now the scene is taken up with the recognition of the unhappy lovers, and the fortunate conclusion of all their troubles; after the novel that is merely read, you have the novel that is acted by Cardenio and Dorothea, Don Fernando and Lucinda. There is not much difference in style. When that affair is all settled, there are still more visitors, more lovers, to come to that well-frequented inn—the captive escaped from Algiers and his Moorish lady. Then the captive's story, but not till Don Quixote has delivered his oration comparing arms and letters. Next appears the judge and his daughter, Clara, and the judge turns out to be the captive's brother. And still they come. For even after the ladies have gone to bed there is still no sleep, and Clara is wakened up by Dorothea to listen to the singing of the muleteer outside in the moonlight—the muleteer who is the young man disguised, Donna Clara's lover. And there are still the officers of the Holy Brotherhood to be encountered, and the other barber who had a claim upon Mambrino's helmet, before Don Quixote can be brought home.

It is not merely a medley of adventures, it is that and something more; it is a confusion of different styles and literary ideals. No great work was ever so casual as this of Cervantes, though there is something like the same accidental origin for the work of Fielding, his English follower and kinsman. A mischievous trick of parody is the beginning of *Joseph Andrews*, "that lewd and ungenerous engraftment," as Richardson called it, on Richardson's stock of moral fiction. The difference between Fielding and Cervantes is that Fielding had Cervantes before him, and as his work grew under his hands into something much more than he intended, he recognised it for what it was, and named it, and gloried in his relation to Cervantes. But Cervantes never got his work so clearly detached in his own mind from its accidental origins. His genius carried him far beyond his original joke, his quizzing of the books of chivalry, but it did not get him free from all the encumbrances of literary formulas, the pastoral, the abstract novel, and so forth.

If there is any difficulty in understanding *Don Quixote* it is made by the author's genius, which was like Chaucer and Shakespeare in variety of mood. Cervantes was a humourist; that is, he could think of more than one thing at a time. Many commentators are without this faculty, and they are easily taken in and led to follow out one single line of intention, when the author is really working on a number of different lines all at once.

Hegel saw this in Cervantes, saw how the chivalry that was apparently burlesqued and flouted was there all the time in the impregnable character of Don Quixote, how the hyperbolical romance that seemed to be driven out of the world came back from infinity on the other side. There is the same contradiction and harmony in one of the finest of all the succession of *Don Quixote*, in Miss Austen's *Northanger Abbey*, a slighter but a much more subtle and perfect work than *Don Quixote.* That also, by the way, may have been one of the accidental things that grow beyond the author's original purpose. *Northanger Abbey* is partly a reduction of Mrs Radcliffe's inventions, of the *Mysteries of Udolpho*, to the conditions of real life, and Catharine Morland is in difficulties, like Don Quixote, because she takes her romances seriously. But there is much more in the book than the one comparatively trivial plot, the argument of the difference between Udolpho and an English county house in the reign of King George III. And among many other things there is romance, and even a rather heightened and exaggerated sort of romance, in the cruel treatment of the innocent heroine, the malignity of General Tylney, the appearance of his son as champion and defender. Cervantes in like manner puts the burlesque romance of Don Quixote and Dulcinea, the penance of Beltenebros, in the same scene with the affliction of Cardenio; and he expects you to take Cardenio's story for true pathos, all the while that Don Quixote is imitating that same sort of romantic theme—the distraction of the unhappy lover.

Cervantes, like Shakespeare, plays fast and loose with the old romantic motives, and tries to make the best of both worlds. This comes out in some of his novels; *e.g.*, in *La Gitanilla* (the Spanish Gypsy, as we have learned to call her), where a purely romantic story is strengthened by means of notes taken from real life; the gypsies are not like the conventional shepherds of

Arcadia. So in *As You Like It*, Shakespeare gets everything he wants out of the romance of the green wood and the outlaws, the shepherd and shepherdess, while all the time Touchstone is there, and Rosalind finds the workaday world in the Forest of Arden. Of course this suggestion of reality, with Touchstone's criticism of the pastoral life, is all mischief; the poet is not fair; he gives you unstinted pure romance at the same time that he imposes on you these ironical references to the real world and its grossness, and pretends that he is a realist.

There is one passage in *Don Quixote*, and a very beautiful one, where Cervantes seems to be playing the same double game with regard to Arcadia, the story of the shepherdess Marcella. Marcella comes forward as an opponent of the conventional literary theory of the martyrs of love: the desperate lover killed by the disdain of the cruel beauty. She justifies herself against all reproaches, she is not to be blamed for the death of the poor youth Chrysostom. The amatory poets, it is implied, are too ready to take for granted that the beauty they profess to worship can have no mind, or will, or right to refuse their devotion. But the mischief of Marcella's reasonable argument is that it belongs to an episode where the pastoral conventions, instead of being exploded, are used by Cervantes as thoroughly and with infinitely greater effect than in his *Galatea*. In the Arcadian literature of the Renaissance there is no other scene so good, so distinctly remembered. If the Arcadian convention is justified anywhere it is here.

NB

One cannot help feeling with Cervantes that there is one strong mark of difference between him and the other men of genius who have given in their fiction a large and generous view of the whole of life. He is much less free than Chaucer, not to speak of Shakespeare. He is taken in by the solemn pretences of the learned schools of literature; he believes in the dignity of certain established forms, the pastoral, the Greek prose romance. This is the true irony of *Don Quixote* and of the spirit of the age and of the world in which *Don Quixote* was written. The author sets out to make fun of the books of chivalry; and all the time he is himself in the grip of a delusion as absolute as that of his hero —the authority of the most vacant and pithless of classical superstitions, the phantoms of Arcadian romance. You cannot imagine Shakespeare or Chaucer taken in like this by the literary principles of Polonius. Sancho says—"Every man is as God made him, and even worse very often." Where Cervantes is worse, it is due to the solemn literary prescriptions in which he believed.

But this is not the way to end. The lecturer or preacher is sometimes apt to forget the true relation between himself and his text. There ought to be no irreverence in pointing out what seem to be defects or fallacies in a great writer, and to understand Cervantes properly one has to accept many things much less amusing or profitable than the conversation of Sancho Panza. But the sum of the whole matter for this country is that *Don Quixote* has been made an English book, and adopted as no book has ever been, except the Bible. It is as familiar as the *Pilgrim's Progress*, and the country is known almost as well as Vanity Fair and Doubting Castle. It is not quite as clear to English readers as Christian's journey; one remembers different scenes as vividly, perhaps, but the travelling directions are harder to keep in mind. This, however, does not mean much, for where was any country so thoroughly comprehensible as Bunyan's? The scenery of Don Quixote is not the only picture that we have in our minds from Spain; no land, except perhaps Greece or Palestine, has given more to that fanciful geography which is pure happiness, attainable luckily by people who were never "furth of this realm." Spain, from the Rock in the South, which is a pillar of Hercules, to the Pass in the North, which is Roncesvalles, is full of the visions of stories; and of these there are none better known than the places of Don Quixote's wanderings. The house of Don Quixote himself, or rather of Alonso Quixano the Good, is easily recognisable. We know the unhappy library, and the courtyard where the books were burned; we know the windmills in the open country, and the fulling-mills by the river. There is a very strong light on the landscape where the sun beats down on the shadowless grassless plain, and the air is full of dazzling heat, and the dust rises—that is Pentapolin of the Naked Arm. There are mountain solitudes, and woods and brooks. There are some effects of lamplight, as in the scene where Don Quixote rose against the "Moorism" of the puppet show. The Duke's house is rather vague, but the meeting with the hunting party and the Duchess, her falcon on her wrist, is vivid, and we remember a pretty picture of Don Quixote entangled in the birding-nets, and helped out of them by the two shepherdesses. There is little need to refer to the last scene of all, Don Quixote's farewell :—

"There are no birds of this year in last year's nests, * * * and so let Master Notary proceed."

To think of those scenes and places is to bring to mind the genius of Cervantes, better than by any formal or studied praise.

Lord Kelvin. By Professor MAGNUS MACLEAN, M.A., D.Sc., F.R.S.E.

[Prepared by request of the Council, and read before the Society, 11th March, 1908.]

LORD KELVIN, whose brilliant life-work is now ended, was from first to last a man of science of the highest type. He knew his province and kept to it. Living and working for the most part in academic seclusion and apparently indifferent to personal publicity, he yet achieved a world-wide fame. His splendid contributions to human knowledge and progress were eminently worthy of the admiration of men, and unlike most men of genius, he lived to reap a rich reward of his toil.

It was from a race of farmers in County Down, Ireland, that this prince of physicists was descended—Ulster men of Scottish extraction. James Thomson, his father, after acquiring some education in his early life, crossed over to Scotland and studied in the University of Glasgow. Mathematics was his forte. With such good results did he pursue the object of his quest that he eventually became Professor of Mathematics, first in the Royal Academical Institute, Belfast, and subsequently in his Alma Mater. The latter appointment he held from 1832 till 1849. He was a man of marked scholarship and character. On nearly all the branches of his subject he wrote text books which were models of clearness, and, though now superseded, are still valued. His two eldest sons, James and William, were almost life-long Professors in the same University, the one of Engineering, the other of Natural Philosophy. There were three other sons and three daughters.

It was while his father was living in College Square, Belfast, that William, the subject of this sketch, was born there on June 26, 1824. When the family removed to Glasgow, in 1832, he was eight years of age. Both he and his brother James received their education from their father, until they matriculated as students in the Old College, Glasgow, in 1834.

William was then only ten years and five months old, and in common with James showed a wonderful aptitude for mathematics. Both outstripped the class in solving problems, and William won two prizes that first session. It is worthy of note, as exhibiting his early proclivities and attainments, that in 1840 he carried off the University medal for the best essay on "The Figure of the Earth." In after years he referred to Dr Nichol's Natural Philosophy lectures as his first start in submarine cable work. The summer of 1839 he characterised as "a white era, an era of brightness in my memory."

Proceeding to Cambridge, the youthful student entered St. Peter's College, where, in 1845, he graduated as second wrangler. In the subsequent examination for the Smith's Prize, which demanded greater originality, he won the first place in competition with the senior wrangler. It was believed that he might have been first wrangler had it not been for his devotion to research, in which even at that early period he engaged, though it seriously encroached on his time for preparation for the competition.

Before this, while yet an undergraduate, and not more than seventeen years of age, he began to contribute articles to *The Cambridge and Dublin Mathematical Journal.* The first, dated 1840, he sent from Frankfort, whither he had gone for a fortnight's holiday. It was a complete defence of Fourier against a charge of error made by Professor Kelland of Edinburgh. These papers attracted great attention. They showed that a new light had arisen in the scientific firmament. French authorities welcomed his appearance, and induced him to write in their journals. In this way he was enabled to clear away various misunderstandings then prevalent among scientists both at home and on the Continent.

At the same time he indulged much in open-air sports. His enthusiasm was intense. He won the silver sculls and rowed in the winning boat in the Oxford and Cambridge race. He also became President of the Musical Society. When the Volunteer movement originated, he enlisted as a volunteer. It was while curling, years afterwards, that he received the injury which rendered him permanently lame. A keen yachtsman and skilful navigator, his schooner yacht, the *Lalla Rookh,* used to be well-known on the Clyde and in the Solent.

From Cambridge, Thomson went to Paris to study in the laboratory of the famous Henri Victor Regnault. There also he came under the influence of the venerable Biot. Within a year he was appointed Professor of Natural Philosophy in the University of Glasgow, and returning from France he began the duties of his new office in 1846. At that time there were no British laboratories available for students, and it is to him that their subsequent introduction into our Universities is due. In the same year he became editor of the paper in which his distinguished articles had first appeared—*The Cambridge and Dublin Mathematical Journal.* For its pages he secured the co-operation of many famous men, among whom were Liouville, Stokes, Sir William Rowan Hamilton, and De Morgan. His own personal contributions were read with avidity by investigators everywhere. It was in a Parisian periodical, edited by Liouville, that he unfolded the far-reaching principle of "Electric Images."

Between 1840 and 1852 his mind seemed particularly active. Embarking on a series of investigations he, during that time, gave an entirely new direction to electrical science, as well as to the study of such subjects as general dynamics, elasticity, hydrodynamics, thermodynamics, and electro-magnetism. It has even been remarked that the foundation of the theory of elasticity, and the analysis of the relations between stress and strain in engineering structures, have been given by him in a manner that will never need correction. During twelve years he contributed no less than 63 papers to different societies and scientific journals. Some of these were read before our own Philosophical Society of Glasgow, of which he became a member during the first session of his Professorship. It is interesting now to recall that he made his first appearance before the Society on 21st April, 1847; was elected President 19th November, 1856; re-elected to that office 18th November, 1874; and appointed Honorary Member exactly fifty years after he was admitted an ordinary member. In presenting him with the Keith medal of the Royal Society of Edinburgh, Sir David Brewster remarked that his papers evinced a genius for the mathematical treatment of physical questions, which had not been surpassed by that of any living philosopher.

At a later period Helmholtz expressed a similar opinion more fully when he said:—"His peculiar merit consists in his method of treating problems of mathematical physics. He has striven with great consistency to purify the mathematical theory from hypothetical assumptions which were not a pure expression of the facts. In this way he has done very much to destroy the old unnatural separation between experimental and mathematical physics, and to reduce the latter to precise and pure expression of the laws of the phenomena. He is an eminent mathematician, but the gift to translate real facts into mathematical equations, and *vice versa*, is by far more rare than that to find a solution of a given mathematical problem, and in this direction Sir William Thomson is most eminent and original."

His investigations of the laws of heat during the early part of his career, will be remembered as among his greatest achievements. Count Rumford and Sir Humphrey Davy had before then done much to disprove the old notion that heat is a material body; but their arguments remained practically unheeded until the fourth decade of last century, when J. P. Joule by determining its dynamical equivalent proved heat to be a mode of motion. It was at this point that Thomson struck in, and by his brilliant rapidity of generalisation worked out the consequences of the discovery. He succeeded in putting it on so satisfactory a scientific basis that opposition was useless, and the doctrine of the conservation of energy in its most general form was thenceforth universally accepted. Though Helmholtz previously wrote a paper on the subject, his was the first clear statement in English of this doctrine as well as of the two fundamental laws of thermodynamics. His line of research then led him to consider how the new finding affected the life of the solar system. And in this investigation he discovered the further important principle of the dissipation of energy, which he announced in 1852. In a paper read before the Royal Society of Edinburgh, he showed that there is a tendency for all energy to become converted into heat at one temperature, the lowest attainable, and when this stage is reached the heat is no longer available for doing mechanical work.

An inquiry naturally followed as to the beginning of our present system, and this is a subject that is now invariably associated with Thomson's name. Whenever the age of the earth is discussed, his opinions are quoted. At that time geologists believed that it was impossible to set any bounds to the period during which the earth and the solar system remained pretty much as they are. Thomson showed how erroneous was this doctrine. By careful calculation he came to the conclusion that the earth is not a mere thin shell with a fluid interior, but is wholly or in great part solid. He held that the actual period of geological time lies in all probability between twenty million and one hundred million years, and judging by the rate of diminution of the sun's heat he was of opinion that the sun will be quite capable of supporting life on the earth under present conditions for ten million years longer. The recent theories on radio-activity do not seem to have altered his estimate to any appreciable extent so far as is known. At least he made no further pronouncement on the subject.

Though particularly interested in thermodynamics, Thomson's experimental and mathematical researches were by no means confined to any one department of Natural Philosophy. "Turn where we like in the annals of latter day science," says a recent writer, "we shall encounter his name, and in molecular physics, especially electricity, it is dominant. In heat it is coupled with the names of Joule and Rankin, in the dynamical theory of gases with Clausius and Helmholtz, in electricity and magnetism with Faraday and Clerk Maxwell."

No man did more by working at the theory of electricity and by practical inventions to make this subtle agency as serviceable as possible. All his instruments were made by Mr James White, Glasgow, whose business developed so much in connection with the Professor's numerous patents,[1] that it was latterly converted into a Company under the name of Messrs Kelvin and James White, Ltd.

Joule and Thomson became intimate friends and collaborated a good deal till the death of the former in 1884. Their paper on the thermal effects of fluids in motion, which appeared in 1852, led to many important results.

Though Thomson's fame in the eyes of the learned rested chiefly upon his mathematical and experimental researches, the average man knew him best through his inventions. It was in connection with the laying of the Atlantic cable that he first came prominently before the public. When the original cable of 1858 failed to act within a fortnight after it had been laid, Thomson took up the matter and, working for a few years at the problem, permanently linked the two worlds by submarine telegraphy in 1866. His success impressed the popular imagination, and he at once became a man of the people in the best sense. On his return to this country in the Great Eastern he received the honour of Knighthood, and in 1892 was raised to the Peerage as Baron Kelvin of Largs.

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[1] Paper by the author on Lord Kelvin's Patents, *Proceedings* vol. xxix., pp. 145-192. Read February, 23, 1898.

The two instruments he invented in connection with the Atlantic cable were the mirror galvanometer and the siphon recorder. A new and improved form of the latter is now used for recording cable messages all over the world. It is interesting to note also that though the name of Marconi is now worthily associated with the development of wireless telegraphy, it was with investigations by Professor William Thomson that it first began. Upwards of fifty years ago, he made the discovery that when a charged Leyden jar is discharged through a metallic coil the discharge is not simply a sudden flow of electricity in one direction, but consists under certain conditions of a series of oscillations or surgings of electricity following one another to and fro at excessively minute intervals of time. This discovery, reached through mathematical analysis, was verified by experiment a few years later. It now lies at the foundation of the work of Hertz on electrical oscillations and their propagation as waves, and is utilised in the different methods of wireless telegraphy.

After successfully laying the Atlantic cable, he and Professor Jenkin of Edinburgh University, acted together as engineers for a number of submarine cables. These included the French Atlantic, 1869; the Brazilian and River Plate of 1873 and onwards; the West Indian Links, 1875; and the Mackay Bennett Atlantic Cable of 1879.

In addition to the numerous delicate instruments he has produced for practical use in electric science, there are two in connection with navigation that are particularly well known. These are his sounding apparatus and mariner's compass. By means of a steel pianoforte wire with a pressure gauge attached to the sinker, he made it possible to ascertain the depth of water from a steamer going at full speed. Formerly the vessel had to be stopped in order to cast the lead. The Thomson instrument obviates this by recording the water pressure either by chemical action or by the compression of a spiral spring. A cast can thus be taken every few minutes.

The other instrument which has helped to make navigation comparatively safe and easy is his mariner's compass. At first it was rejected by the Admiralty, and even the Astronomer Royal, Sir George Airy thought it would not do. Now it is in use on all the large well-found ocean steamers, and is the service compass on the British Navy carried by all war vessels, with the exception perhaps of the smaller ones, such as torpedo boats and destroyers. So long as ships were built of wood the old compass acted with fair regularity though it had peculiarities. But with the advent of iron vessels a serious difficulty arose on account of the close proximity of so much metal to the needle. Hence the need for the Thomson compass which, when properly adjusted, serves its purpose notwithstanding the large masses of iron in its neighbourhood.

Lord Kelvin's published contributions to scientific knowledge are very numerous. Apart from the papers he continued to read before the Royal Societies of London and Edinburgh, the British Association, and other kindred bodies, he was the author of a book, issued in three volumes, entitled "Popular Lectures and Addresses"; joint-author with Professor Tait, Edinburgh, of the well-known "Treatise on Natural Philosophy"; and still more recently, author of the "Baltimore Lectures." Fortunately, in his collected works his most important papers have been arranged and brought up to date by himself.

Like his distinguished brother, Professor James Thomson who predeceased him in 1892, Lord Kelvin was a coiner of words, and such terms as tetrakaidekahedronal cells, parallelepipedal partitionings, and emantiomorphs, were common in his addresses. He usually carried a note-book in which he made frequent notes; and it was a peculiarity of his, that though he could readily write from memory complicated mathematical formulæ, he many a time seemed at a loss to recall the product of two simple numbers.

Among the honours that flowed in upon him throughout his career, the following are noteworthy. From the Universities of Cambridge, Edinburgh, Glasgow, Dublin, and Montreal, he received the honorary degree of LL.D.; from Oxford, D.C.L.; and from Gottingen, M.D. On the death of the Earl of Stair he became Chancellor of the University of Glasgow. He was an ex-President of the Royal Society of London, and of the British Association. At the time of his death he was President of the Royal Society of Edinburgh for the fourth time, and of the Institution of Electrical Engineers for the third time. Besides being a Knight Grand Cross of the Royal Victorian Order, and a Privy Councillor, when King Edward created the Order of Merit, Lord Kelvin was chosen as one of its first recipients. From other countries he held various distinctions, having been Foreign Associate of the French Academy, a Grand Officer of the Legion of Honour of France, a Knight of the Order Pour le Mérite of Germany, and a Commander of the Order of Leopold of Belgium.

He was a frequent and valuable witness on Royal Commissions.

In 1896, when he attained his jubilee as Professor, it is still fresh in the public memory how he was feted and honoured. Savants from all lands assembled together at Glasgow University to do homage to his genius. Kings and princes, colleges and scholastic institutions, universities and learned societies sent messages of congratulation. If we consider the status and varied nationalities of the delegates we may say that seldom, if ever, in the annals of science has there been such a brilliant concourse of the elite of intellect to do honour to one man. It is given to few to reap such a harvest as he. Yet through it all Lord Kelvin remained the simple, unaffected, enthusiastic man of science that he always was, unsophisticated and ever ready to recognise and encourage merit in others. His kindness to those who came to him with a difficulty was remarkable.

Aware of his own solid achievements yet conscious of ideals unrealised, it was on this occasion he made the memorable remark, "One word characterises the most strenuous of the efforts for the advancement of science that I have made perseveringly for fifty years: that word is failure. I know no more of electric and magnetic force or of the relation between ether, electricity, and ponderable matter, or of chemical affinity, than I knew and tried to teach my class students in my first session as Professor."

It was evidently a dream of his life to try to reach a well-founded theory of matter, and it would appear as if he had from time to time hints and suggestions, visions or glimpses of the ideal in view. Such a theory would not only account for gravitation and electricity, but might also be the support of a science of vital and mental processes. It is well known how he worked at his famous vortex-atom theory. But ultimately he felt it was beset with so many difficulties as to be unworkable. The fact that he had been baffled in his attempt to peer behind the veil of nature seemed to make all his other success appear but a failure. To all appearance he would have preferred to have succeeded in his favourite quest rather than to have achieved what he did in other directions. At anyrate he was once heard to say that in comparison with this he regarded the time spent on other subjects as in a manner wasted.

Within these limits, the mechanism of the physical universe was known to him as it was to few of his contemporaries. But he held firmly to the belief that through all space and time life proceeds from life and from nothing else. In discussing the question as to how it originated on the earth he made this characteristic admission to the British Association in 1871: "The hypothesis that life originated on this earth through moss-grown fragments from the ruins of another world, may seem wild and visionary. . All I maintain is, that it is not unscientific."

Lord Kelvin was neither an agnostic nor a materialist, but a devout religious thinker. His unwavering conviction in a directive purpose in the world was, it will be remembered, a few years ago a subject of great public interest in the "Times" and the press generally throughout the country. In one of his addresses he remarked that "it is impossible to conceive either the beginning or the continuance of life without an overruling creative power. Therefore no conclusion of dynamical science regarding the future condition of the earth can be held to give dispiriting views as to the destiny of intelligent beings by which it is at present inhabited." And again, "I have always felt that the hypothesis of natural selection does not contain the true theory of evolution, if evolution there has been in biology. I feel profoundly convinced that the argument of design has been greatly too much lost sight of in recent zoological speculations. Overpoweringly strong proofs of intelligent and benevolent design lie around us, and if ever perplexities, whether metaphysical or scientific, turn us away from them for a time, they come back upon us with irresistible force, showing to us through Nature the influence of a free will, and teaching us that all living things depend on one everlasting Creator and Ruler."

Lord Kelvin was a member of the Episcopal Church; and in politics a Liberal Unionist. Formerly he had been a Liberal, absorbed in science and taking little active part in the passing controversies of the day. But when in 1886 Mr Gladstone brought forward his Home Rule Bill, his patriotic sympathies as an Ulster man were stirred, and he came prominently forward to denounce what he regarded as an attempt to dismember the Empire.

He was twice married, first in 1852, to Margaret, daughter of Mr Walter Crum, of Thornliebank; and again in 1874, to Frances Anne, daughter of Mr Charles R. Blandy, of Madeira, who, as Lady Kelvin, survives him. There were no children of either marriage.

In 1899, when he retired from the duties of his Professorship, Lord Kelvin spent a good deal of his time at his beautiful country seat of Netherhall, Largs. He was also frequently in London and interested to the last in his favourite studies. Throughout his career he enjoyed vigorous health, except that for the last twenty years he suffered at intervals from acute neuralgia. His final illness began with a chill, and after three weeks he passed away at his Scottish residence at Largs, on 17th December, 1907. When the news of his death became known it was universally felt that the National Valhalla at Westminister was the fitting place for his tomb. And there amid the great traditions of British achievement and character is enshrined the memory of the renowned physicist whose name will go down to posterity with those of Galileo Laplace, and Newton.

[The titles of communications made by Lord Kelvin to the *Proceedings* and notable events connecting him with the Society are given in chronological order in an Appendix.]

APPENDIX.

2nd December, 1846. Elected a member of the Society.

21st April, 1847. "An account of Stirling's Air Engine." He exhibited a model, and called attention to the circumstance that the mechanical effect to be obtained by an air engine from the transmission of a given quantity of heat, depends on the difference between the temperature of the air in the cold space above and the heated space below the plunger. From the principle of action of this air engine he also deduced the fact that water at 32° F. may be converted into ice at 32° F. without the expenditure of any work.

12th April, 1848. "On an absolute thermometric scale, founded on Carnot's theory of the motive power of heat and calculated from the results of Regnault's experiments on the pressure and latent heat of steam."

5th December, 1849. "On some remarkable effects of Lightning observed in a farm-house near Moniemail, Cupar-Fife."

1st December, 1852. "On the Economy of the Heating or Cooling of Buildings by means of Currents of Air."

19th January, 1853. "On the Mechanical Values of Distribution of Electricity, Magnetism, and Galvanism."

19th January, 1853. "On Transient Electric Currents." The object of this communication was to determine the motion of electricity at any instant after an electrified conductor of given capacity is put in connection with the earth by means of a wire. The solution is founded on the equation of energy and indicates two kinds of discharge—a continued discharge and an oscillatory discharge.

19th November, 1856. Elected President of the Society.

3rd December, 1856. Described the Atlantic Electric Telegraph and produced specimens of the microscopic shells obtained in taking soundings between the coasts of Ireland and Newfoundland.

18th January, 1858. "The different Conductivities of samples of Copper Wire." The inquiry was suggested by circumstances which arose in connection with the construction of the Atlantic Telegraph Cable. So great was the diversity of conducting power, though they were manufactured in the same way and at the same establishment, that the use of the best conducting wire in place of the worst, would make a difference in the cost of the Atlantic Cable of £100,000 sterling. It is quaintly expressed in the Proceedings of the evening that Dr Francis Thomson and Mr James Bryce suggested certain theoretical considerations towards an explanation of these singular phenomena, but that the Professor did not appear to regard them as satisfactory.

14th December, 1859. "Recent investigations of M. Le. Verrier on the motion of the planet Mercury."

14th December, 1859. "On Photographed Images of Electric Sparks." These were received from Mr Feddersen of Leipsic, and afforded a remarkable illustration of the oscillatory discharge indicated in his own paper to the Society on 19th January, 1853.

4th January, 1860. "On the variation of the Periodic Times of the Earth and inferior Planets produced by matter falling into the Sun."

4th January, 1860. "On Instruments and Methods for observing Atmospheric Electricity."

26th March, 1862. "On a new Instrument for Measuring Electric Resistance in Absolute Units."

26th March, 1862. "On the rigidity of the Earth." Here it is stated that taking into account the phenomena of the tides, and of precession and nutation, it seems most probable that the earth as a whole is more rigid than steel, and quite certain that it is more rigid than glass.

6th April, 1864. "Periodic variations and the secular lowering of Terrestrial Temperature."

25th January, 1865. Exhibited and described his Heterostatic Electrometers.

22nd March, 1865. "On Secular Variations of Terrestrial and Atmospheric Temperature."

24th January, 1866. "On Electrically Impelled and Electrically Controlled Clocks." He hoped that the example first set in Scotland by the University of Glasgow, in putting its tower clock under control, would be followed, not only in St. George's Church clock, but very soon in every public clock in Glasgow, Paisley, Greenock, and Ayr, and even in Edinburgh, notwithstanding the time-gun.

24th January, 1866. "On a Land Standard Electrometer, and a Marine and Land Telegraphic Testing Electrometer."

6th March, 1867. "On Vortex Atoms."

18th March, 1868. Exhibited and explained New Electrical Instruments for delicate testing purposes, for use at sea.

24th March, 1869. Joined in the discussion on Maintenance of Solar Heat.

14th December, 1870. "On the Attractions and Repulsions due to Vibration, observed by Guthrie and Schellbach." This paper discussed the curious hydro-kinetic phenomena described by Guthrie, and the possibility of applying these results to discover the mechanism of magnetic force, and possibly also the mechanism by which the force of electricity and of gravity are transmitted. The lecturer, believed, however, that the true kinetic theory of magnetism involved quite a different class of motion.

18th March, 1874. "On Deep Sea Sounding by Pianoforte Wire." A full description, with diagrams, was given.

18th November, 1874. Re-elected President.

23rd February, 1876. Commented on *Vena Contracta* in connection with a letter from William Froude, on 20th Decemaer, 1875, and a letter written by Newton, 24th March, 1710/1.

January, 1877. "Remarks on the Glasgow Philosophical Society's Memorials and Petitions of January, 1877, to the Lord Chancellor and to the two Houses of Parliament regarding Patent Law Amendment."

21st November, 1877. "On the Resonance of Cavities."

29th November, 1882. "Approximative Photometric Measurements of Sun, Moon, Cloudy Sky, and Electric and Other Artificial Lights."

9th January, 1884. "On the Measurement of Electric Currents and Potentials."

20th April, 1887. "On a Double Chain of Electrical Measuring Instruments to Measure Currents from the Millionth of a Milliampere to a Thousand Amperes, and to Measure Potentials up to Forty Thousand Volts."

4th February, 1888. "On a New Composite Electric Balance."

2nd December, 1896. Admitted as an Honorary Member, and was presented with an address by the Society. On the same evening a bronze bust of Lord Kelvin, subscribed for by members, was presented to the Society, and a replica presented to Lady Kelvin.

1st March, 1899. Took part in a discussion on "Electric Discharges in Vacuo."

12th and 13th November, 1902. Attended the Centenary Celebration of the Society as the Delegate of the Royal Institution of Great Britain. Was present at the Conversazione on the 12th November, and proposed the toast "Our Guests" at the banquet on the following evening. In his speech he gave many reminiscences of his student days in Glasgow and of his early connection with the Society.

Some Notable Scottish Architects. By ALEXANDER GARDNER.

[Presidential Address to the Architectural Section, delivered 18th November, 1907.]

IN addressing you for the first time as President of the Architectural Section allow me to express my thanks for the honour you have been pleased to bestow on me in electing me to the Chair, and to crave your indulgence and support while I endeavour to discharge the duties attached to the office.

Before proceeding with my address I would remind you that our Society will complete the jubilee of its existence in January next. It was on the 14th January, 1858, that a meeting of architects was held in the city to found the Glasgow Architectural Society, of which body we are the direct descendant. The Glasgow Architectural Society existed until the formation of the Glasgow Institute of Architects, when it was considered desirable to carry out the arrangement whereby the former became a Section of the Philosophical Society. While we have done much good work in the past our Section might, especially with regard to the matter of attendance at our meetings, a subject which has been repeatedly before your Council, be still more healthy and vigorous than it is. I appeal to you to endeavour to increase and extend the usefulness of this Section by any means that may lie in your power. We were invited recently to amalgamate with the Glasgow Institute of Architects and the Glasgow Architectural Association, but, after full consideration, we decided to retain our connection with the Royal Philosophical Society, which is a great aid in giving weight and publicity to our proceedings. We have, however, made a practice during the past few winters, of holding joint meetings—two in each Session—with the Architectural Association, or, as it is now called, the Associate Section of the Glasgow Institute of Architects. I trust these joint-meetings are to our mutual benefit.

My subject to-night, "Some Notable Scottish Architects," was suggested by a visit I paid to the Exhibition of Architectural Designs promoted by the Edinburgh Architectural Association, and held in that city during the past summer. A feature of the exhibition was a collection of portraits of some of our most eminent Scottish architects, and these portraits suggested to me the idea of writing a series of biographical sketches of the leading exponents of our art in Scotland, and presenting them to you to-night.

During the earlier periods of Scottish Architecture, like that of other countries, the architect is with difficulty, if at all, detected amidst his work. It is true that as early as the 13th century we find mention made of such men as Adam Gilbert, Archdeacon of Moray, who is said to have designed the Cathedral of Dornoch, but of the bulk of the obscure and forgotten designers and builders of our old cathedrals, churches, and castles, little is known. Later on frequent mention is made of "Master Masons," "Masters of the Works," and other titles, but there is considerable difficulty in arriving at clear notions of the duties attached to these offices. At what time the "architect," as we now know him, stood forth fully developed is uncertain, but it was certainly not until about the time of Sir William Bruce of Kinross, whom I have placed first in order of time in my list of noted Scottish Architects.

SIR WILLIAM BRUCE.

Sir William Bruce of Kinross, architect in Scotland to Charles the Second, may be regarded as standing between the ancient and modern architects of Scotland—between those obscure or forgotten builders I have referred to and the latter day men of whom I shall subsequently treat. Bruce was born in the early part of the 17th century and was the second son of Robert, third Baron of Blairhill, in Perthshire. He was much engaged in politics, and though too young to have taken any active part during the troublous reign of Charles I., no one in Scotland probably contributed more in a private capacity to bring about the restoration of the royal family, to whom he proved a firm and constant friend. Being a man of ability and address he retained the friendship of Charles II., who rewarded him with the office of Clerk to the Bills, a very lucrative apppointment in those days. He was created a baronet in 1668. His skill and taste in building led to his appointment, in 1671, as the King's surveyor and master of works in Scotland, an appointment corresponding to that of Sir Christopher Wren in England. Of his architectural training I have been able to obtain no information. In spite of his official position, which he may have secured partly through his political influence, he seems to have practised architecture rather as an amateur than a professional designer, but in a very successful manner. Holyrood House, the Palace of the Stuarts in Edinburgh, was designed by him, although probably the carrying out of the building owed a good deal to Robert Mylne, the contractor, who was also the King's master-mason. Bruce built his own mansion-house at Kinross, which was long regarded as one of the boasts of Scottish architecture, and was one of the earliest examples in Britain of a style of country mansion which soon became almost universal. Perhaps his most admired work was Hopetoun House, Linlithgowshire—now much altered by the later designs of the Adams. Harden House in Teviotdale, and Moncrieff House in Perthshire were built from his designs, as was also the old Merchants' House in Glasgow, an edifice of which only the picturesque steeple in the Bridgegate now remains. Bruce represented the County of Kinross in Parliament, and died at a very advanced age in 1710.

WILLIAM ADAM.

From Sir William Bruce I pass on to notice briefly a pupil of his, William Adam of Marybury, father of the celebrated brothers Adam. William Adam was born at Kinross in 1689, and appears, as I have mentioned, to have been brought up as a pupil by Sir William Bruce. He completed Hopetoun House, which was begun by Bruce, and succeeded the latter as Surveyor of the King's Works in Scotland. Adam soon acquired a large practice, and executed many important works, consisting of mansions of all sizes, public buildings, bridges, &c. Drum House, Midlothian, exhibits a good specimen of his art, which is perhaps overshadowed by the works of his celebrated sons Robert and James, but it is doubtful whether, according to some critics, the works of their less known father are not of equal, or even superior merit to theirs. The father collected and published his designs, along with those of other contemporaries in a folio work called

"Vitruvius Scotticus," probably in imitation of Colin Campbell's "Vitruvius Britannicus."

Adam died in 1748 and left four sons, John, Robert, James and William, with the second of whom I will now deal.

ROBERT ADAM.

Robert Adam was the most celebrated of the four brothers I have just named. He was born at Kirkcaldy in 1728, and educated at Edinburgh University, where he formed friendships with several young men who afterwards became famous in different walks, amongst them being, David Hume, William Robertson, the historian, Adam Smith and Adam Ferguson. At the age of 26 he went to Italy in the company of a French architect, and remained abroad for about eight years. While abroad, he studied the remains of the Emperor Diocletian's Palace at Spalatro, of which he afterwards published a folio volume, with engravings by Bartolozzi and others, from his drawings. During his absence abroad, Adam was elected F.R.S. and F.S.A., and on his return home he was appointed architect to George III., an office he had to resign six years later when returned to Parliament as Member for Kinross-shire. After the publication of his great work on Spalatro, Adam made a great reputation as a classical architect, and, with his brother James as partner, enjoyed more than any other architect, the patronage of the nobility. Amongst their important works may be mentioned Lord Mansefield's Mansion near Hampstead, Luton House, Asterley House, Keddlestone, Compton Verney, Lansdowne House in Berkeley Square, the University of Edinburgh (afterwards completed by Playfair), the Register House, Edinburgh, the front block of Glasgow Royal Infirmary, and the old Assembly Rooms in Ingram Street, afterwards the Athenæum, and now removed.

Fergusson, in his "History of Modern Architecture," rates their art as certainly inferior to that of Sir William Chambers, and says, "Their great merit—if merit it be—is, that they stamped their works with a certain amount of originality, which, had it been of a better quality, might have done something to emancipate Art from its trammels." Fergusson considers the façade of the Assembly Rooms at Glasgow as one of the very best specimens of their style, and freer from its defects than most of their designs. With regard to the Edinburgh University, the most important public building entrusted to their care, Fergusson says, "We possess few public buildings presenting so truthful and so well-balanced a design as this, and certainly the Adams never erected anything else which was nearly so satisfactory."

The Brothers Adam are said to have originated the idea of giving to a number of unimportant private houses the appearance of one imposing structure, of which, Portland Place, Stratford Place, Hamilton Place, and the south and east sides of Fitzroy Square, all in London, are examples. An innovation of a more doubtful kind was their use of stucco in facing brick houses to resemble stone work. Whatever were the architectural defects of their works, the brothers founded a style which was marked, especially in interiors, by a fine sense of proportion, and a very elegant taste in the selection and disposition of classical ornaments. It was their custom to design furniture in character with the apartment it was intended to occupy, and their works of this kind are still greatly prized. Amongst them may be specially mentioned their sideboards with elegant urn-shaped knife boxes, but they also designed book-cases and commodes, brackets and pedestals, clock-cases and candelabra, mirror frames and console tables, of singular and original merit, adapting classical forms to modern uses with a success unrivalled by any other designers of furniture in England. Of their decorative work generally, it may be said that it was rich, refined and chaste.

In 1773 the Brothers Adam began the publication in folio parts of their "Works in Architecture," a work which was not completed until the issue of a posthumous third volume in 1822.

Of the high estimation in which Robert Adam was held, and the social position he attained, no greater proof can be offered than the record of his funeral in Westminster Abbey, in March, 1792, when his pall-bearers included the Duke of Buccleuch, the Earls of Coventry and Lauderdale, Viscount Stormont, and Lord Frederick Campbell.

WILLIAM STARK.

I will now refer briefly to William Stark, to whom Glasgow is indebted for four well-known public buildings, and of whom at his death Sir Walter Scott wrote that "more genius died than is left behind among the collected universality of Scottish architects." Stark was a native of Dunfermline. He practised at Glasgow, where one of his first works was the fitting up of the choir of the Cathedral, known as the Inner High Church. He was responsible for the gallery erected therein, but which is now happily cleared away. In 1804 he designed the Hunterian Museum at the Old College in High Street, a fine study of the Roman Doric. In 1807 he designed St George's Church in Buchanan Street, the spire of which forms one of the finest architectural features of the city. Stark's other works in Glasgow are, the Justiciary Courts in Jail Square, and the Lunatic Asylum in Parliamentary Road, latterly the City Poorhouse, but now removed for the extension of Buchanan Street Station. The asylum at the time of its erection—1809-1810—was considered the finest in Britain, and Stark was afterwards engaged on similar edifices in other parts of the country. If we compare Stark's buildings with those of the Brothers Adam, we find a marked change in the expression. Instead of the chaste, delicate treatment of the Adams, sometimes inclining to weakness, we have a bold dignified expression, full of manly vigour, without lessening the expression of solidity, endurance, and repose, which are so essential qualities in classic art. Stark latterly went to Edinburgh for his health, and died at Drumsheugh, near that city, in 1813.

PETER NICHOLSON.

Contemporary with my last subject was an architect whose name is perhaps more familiar to us as the author of several treatises on the art of building than as the designer of celebrated buildings. I refer to Peter Nicholson, a good example of the self-taught Scotsman of humble parentage. Peter was the son of a mason, and was born in East Lothian in 1765. Educated at the village school he displayed an extraordinary talent for mathematics, and studied geometry by himself far in advance of what was taught at the school. After serving an apprenticeship as a cabinetmaker he proceeded to London at the age of 24 and soon produced his first publication, "The Carpenter's New Guide," for which he engraved his own plates. In 1800 he came to

Glasgow and practised as an architect for some eight years. He was afterwards at Carlisle for a time and soon back in London again where he gave private lessons in mathematics, land-surveying, &c., and produced his "Architectural Dictionary." We afterwards find him at Morpeth in Northumberland, and Newcastle-on-Tyne, where he opened a school, but was not apparently successful, for in July 1843 a subscription was raised on his behalf, and £320 presented to him. He died at Carlisle at the age of 79.

Nicholson's life was devoted to the improvement of the mechanical processes in building. His great abilities as a mathematician enabled him to simplify and generalize many old methods, besides inventing new ones. For his improvements in handrailing the Society of Arts voted him their gold medal in 1814, and the sum of twenty guineas in the same year for his invention of the centrolinead for use in drawing perspectives, and in the following year a silver medal for improvements in the same instrument.

As an architect Nicholson designed Castleton House and Corly Castle, both near Carlisle; in Glasgow, Carlton Place was to his design, and some work at the old College in High Street; he also built a timber bridge across the Clyde, and laid out the town of Ardrossan, which owes its rise to Hugh, Earl of Eglinton, who spent vast sums in striving to make it the port of Glasgow.

DAVID HAMILTON.

I pass to David Hamilton of Glasgow, who, during the early part of last century designed most of the principal buildings in Glasgow and the West of Scotland. He was Glasgow's most celebrated architect, and his name and works are better known to us than any other Glasgow architect, excepting perhaps those of "Greek" Thomson. Of Hamilton's architectural training I have not met with any record. In Glasgow he was architect of the Theatre, the Western Club-house, Royal Exchange, the British Linen, Union, Clydesdale and Western Banks, Hutcheson's Hospital and School, St. Paul's Church, Normal School, the Lodge at the Necropolis, St. John's Church in the east-end, and many other works of less note. His greatest work was the Palace built for the Duke of Hamilton, remarkable no less for its extent than for its dignity and graceful proportions and its magnificent portico. Other noted undertakings of his were Toward Castle, Lennox Castle—which some consider the most finished of his architectural efforts, and Dunlop House, a beautiful specimen of the Jacobean style. Hamilton entered in the competition for the Houses of Parliament and was awarded the third premium, Sir Charles Barry's designs being preferred. In the competition for Donaldson's Hospital, Edinburgh, Hamilton was one of the three architects selected, the others being Gillespie-Graham and Playfair. Hamilton was 75 years of age at his death, which occurred, after an attack of paralysis, in 1843.

J. GILLESPIE-GRAHAM.

Following my list chronologically I come to the name of James Gillespie-Graham, one of a brilliant quartette of contemporary Edinburgh architects, the others being Thomas Hamilton, William Burn, and William Henry Playfair. Graham's original name was Gillespie. He was born of poor parents of this name at Dunblane about 1777, and rose from the position of a working joiner to be a leading Gothic architect. Of his earlier days we know little. He married Margaret Anne Graham, daughter and heiress of William Graham of Orchill, Perthshire, and assumed the name of Graham, and succeeded to the estate on the death of his father-in-law. There is a story which, if true, is interesting and romantic. He was engaged working at the mansion-house of Orchill, when the daughter of the house, Miss Graham, saw and loved the handsome young craftsman, and determined to make him her own. The lady succeeded eventually, and in course of time the young tradesman, James Gillespie, was transformed into Mr James Gillespie-Graham of Orchill. We have no information as to how or where he studied architecture, but that much study and training preceded the attainment of the position which he afterwards occupied is without doubt. The list of his works is a large one. He designed Culdees Castle, Perthshire; additions to Dunse Castle, Berwickshire; Crawford Priory, Fifeshire; the Roman Catholic Chapel, Broughton Street, Edinburgh; St. Andrews R.C. Cathedral, Glasgow. He laid out part of the lower new town of

Edinburgh; designed a church at Liberton, near Edinburgh; rebuilt Armidale Castle, designed Blythswood House, Renfrewshire; Taymouth Castle for the Marquis of Breadalbane, and rebuilt Brodick Castle, Arran, for the Duke of Hamilton, besides a great number of other works, both public and private, a full list of which would take up too much time to detail. Together with A. W. Pugin, the great Gothicist, he designed the Assembly Hall, Castle Hill, Edinburgh, for the meetings of the General Assembly of the Church of Scotland. The design of the spire of this building, a conspicuous feature of the old town, has been claimed for Thomas Hamilton, and a controversy on this point was for some time waged. Graham's friendship with Pugin, with whom he was often professionally associated, was the result of an accident. Pugin, who was fond of sailing, was during one of his voyages wrecked below Leith. Having lost everything, Pugin arrived in Edinburgh in a destitute condition. Knowing Graham by repute, he applied to him in his distress, and was received with the greatest kindness. Graham rigged him out and provided him with money and some sound advice. Foreseeing young Pugin's talent, he conjured him to give up his mode of life, and to pursue the career for which nature had so brilliantly prepared him. On parting Graham presented to Pugin his pocket compasses, and these Pugin used through life. Graham died at his residence, York Place, Edinburgh, in the 78th year of his age, and was buried in Greyfriars' Churchyard there.

THOMAS HAMILTON.

The second of the quartette of contemporary Edinburgh architects I have named is Thomas Hamilton. He was born at Edinburgh in 1784, his father being Thomas Hamilton, a carpenter in the city, with whom the son served a regular apprenticeship. Of his architectural training I have found no mention.

In 1816 Hamilton submitted designs in competition for the completion of the Edinburgh University buildings, but those of Playfair were chosen. In 1818 his design for the Burns Memorial to be erected at Alloway was selected, and after some unavoidable delay the building was commenced in 1820 on the anniversary of the poet's birth. In 1819 Hamilton was an unsuccessful candidate for the post of Superintendent of Public Works in Edinburgh. In 1825 he designed the Knox monument in Glasgow Necropolis, a lofty Doric column surmounted by a figure of the great Reformer by Robert Forrest. In the same year was laid the first stone of the Edinburgh High School on the Calton Hill, considered one of the finest Greek buildings in that city. The design is a study of the Athenian Temple of Theseus. In 1827 Hamilton laid out the new lines of approach and thoroughfares on the south and west sides of the Castle, including George IV. Bridge. A year later he erected from his designs the town buildings and beautiful spire at Ayr, and in 1830 he gratuitously supplied the design for the Burns monument on the edge of the Calton Hill. This was intended as a receptacle for Flaxman's statue of Burns, but that statue has since been removed to the National Gallery, and its place filled by Brodie's bust of the poet and many interesting relics. In 1831 he designed the Orphan Asylum at the Dean, and in September, 1834, he erected, within a fortnight, the Pavilion for the great Grey festival in Edinburgh. Dr Guthrie's Free Church in the Netherbow; the Parish Church of Alyth, of Norman design with a lofty tower; the monument on the Calton Hill—an Egyptian obelisk—to the memory of the political martyrs of 1793, and the Hall of the Royal College of Physicians in Queen Street, Edinburgh, are among his designs. He was one of the original founders of the Royal Scottish Academy, and acted for some time as Treasurer. Hamilton died at Howe Street, Edinburgh, in 1858, aged 73. He was a man of culture, greatly esteemed in his business relations, and beloved for his kindly disposition.

WILLIAM BURN.

The third of the quartette was William Burn. No man of his day more honourably maintained the dignity of the profession before the world for a period far beyond the allotted span, or was more sincerely mourned at his death by those of his professional brethren who had the privilege of his acquaintance. Burn was born in Edinburgh in 1789. His father was Robert Burn, a successful builder and architect of the time in Edinburgh, who designed the Nelson Monument on the Calton Hill, an example of his skill not much appreciated. Whatever were his architectural attainments, the father showed great judgment in the professional training of his son. Young Burn, after an elementary training by his father, entered the office of Mr (afterwards Sir Robert) Smirke of London, then at the height of his fame and sharing with Sir John Soane the best practice in London. Smirke's work was chiefly in the classical style, and young Burn was educated in the severe traditions of the period. On his return to Edinburgh after a few years experience in Smirke's office, Burn began business and at once met with signal success. In 1816 he was second to Playfair in a competition for the completion of Edinburgh University Buildings, and in the same year designed the Custom House at Greenock, and the Church of St John at the west end of Princes Street, Edinburgh. From this time his career was one of uninterrupted success. He divided with Playfair the best architectural work of the time in Scotland. Most of the Scottish and a large number of the English aristocracy were his clients: a list of his patrons reads like a roll of the peerage. In 1844 Burn found it necessary to remove to London, leaving his Edinburgh business in charge of David Bryce, who had become his partner. This partnership existed for about six years, after which Burn ceased to practise in Scotland. Burn's strength lay in domestic work. Mansions of his design are to be found in almost every county of the United Kingdom. Among those are in Scotland—Riccarton, for Sir W. Gibson-Craig; Niddrie, for Colonel Wauchope; Tynninghame, for the Earl of Haddington; Ardgowan, for Sir Michael Shaw-Stewart; Buchanan House, for the Duke of Montrose; and Dalkeith Palace and Bowhill for the Duke of Buccleuch. In England the list is too long to quote. Burn's best-known public works are St. John's Church, the New Club, Melville Monument, John Watson's Hospital, the Music Hall, and the alterations at St Giles Cathedral, all in Edinburgh. For the last—the work at St Giles's—Burn has been much and severely criticised, and not without reason, but the work, such as it is, was probably not behind the ideas of Gothic architecture then prevailing. In 1856 Burn was one of the three judges or assessors appointed by the Government to decide the competition for the Foreign and War Offices. As early as 1830 he became acquainted with Kemp, who was afterwards the architect of the Scott Monument, and proved a fast friend to Kemp through life. When Kemp's design was the one most favoured for the Scott Monument, and great and persistent opposition was offered to his appointment on the ground of his being an obscure and uneducated architect, it was Burn who stood forward in his defence, and successfully assisted him to the appointment, which was the crowning triumph of his life.

Burn's personal character is thus described by his friend Professor Donaldson—"He was frank and plain-spoken, occasionally even to roughness; no flatterer, prudent in counsel, and firm in his opinion when once formed. He was a man of the highest honour, integrity, and independence. Habitually reticent and desirous of avoiding criticism, to which he was sensitive, he has been wrongly accused of selfishness and jealousy. He was always ready to aid his less successful professional brethren." Burn died at his residence in London, in 1870.

WILLIAM HENRY PLAYFAIR.

The last of the quartette is William Henry Playfair, the architect who probably bulked most largely in the public eye of Scotland during the 19th century. Playfair was born in London in 1790, and was the son of James Playfair, an architect of some repute in the metropolis. Though born in England, Playfair was of Scotch extraction, his grandfather, James Playfair, being the minister of Benvie, in Forfarshire. His uncle was the celebrated mathematician and natural philosopher, Professor John Playfair of Edinburgh, with whom young Playfair came to reside at the age of 15, on the death of his father who died at a comparatively early age. Young Playfair attended classes in Edinburgh University, among them his uncle's lectures on natural philosophy. In the special study of architecture he was a pupil of William Stark, of whom I have already treated. His education being thus so far advanced, he returned to London and studied there under the architects Wyatt and Smirke. In 1816, the parliamentary commissioners appointed for re-building and enlarging the University of Edinburgh invited architects to give in plans. Playfair's design was successful, and he carried out the great quadrangle as we now see it. He was next engaged with designs for the Observatory on the Calton Hill, and for Dollar Academy.

In 1819, he designed the gateway and lodge to Heriot's Hospital, and the Advocates' Library. In 1820 and the following years, he was employed in designing a series of terraces, crescents, and streets on the slopes of the Calton Hill and north-east of it, the most remarkable of them being the Regent, Royal, and Carlton Terraces, and on the north side of Edinburgh, the Royal Circus. In 1822 he was appointed to prepare designs for the Royal Institution, the well-known building on the Mound. Four years later Playfair was engaged, along with Mr Cockerell, with the designs for the National Monument on the Calton Hill, proposed to be built on the plan of the Parthenon at Athens. About the same time he erected St Stephen's Church, Edinburgh, an edifice not regarded as one of his happiest efforts, although the carpentry of the roof is much admired. The Surgeons' Hall, Edinburgh, was erected in 1829 from his plans, and is considered one of his best works in the stricter classical style. The monument to his uncle, Professor Playfair, and that to Dugald Stewart, the philosopher, both on the Calton Hill, and designed in the Greek style by Playfair, are worthy of special notice for their beautiful proportions and detail. From 1842 till 1848 Playfair was engaged in constructing Donaldson's Hospital in the Tudor style, the building which perhaps gained for him the most extensive reputation. This building is of size and dimensions such as to render it impressive. It is of fine proportions, and enriched with appropriate detail, and is considered on all hands to be one of the architect's most successful works. The only buildings of Playfair in the Gothic style are Minto Church, and the Free Church College, Edinburgh, the latter not a particularly happy effort, though the interior quadrangle is considered a good example of collegiate architecture. In 1850 the plans of the National Gallery on the Mound were prepared by Playfair. With these I close the account of his works. His classical buildings are predominant in any view of modern Edinburgh and have gained for it the title of the "Modern Athens." It may be doubted, however, whether the classical style is in character with the naturally picturesque and romantic aspect of our northern capital.

Playfair was distinguished by the amenity of his disposition, his gentlemanly bearing, and honourable character. No one was more devoted to his profession. It is said that in making and carrying into execution the designs with which he was entrusted, he spared himself no labour, mental or physical. His taste was fastidious to an almost painful degree, and he would consider a thing for days and weeks before he could satisfy himself. He made a great part of the drawings for the various buildings on which he was engaged with his own hands, often working at them 12 hours a day. He had never a robust constitution and suffered latterly from an affection of the spine. He died in his house in Great Stuart Street, Edinburgh, in March, 1857, at the age of 67.

GEORGE MEIKLE KEMP.

From Playfair, the designer of so many important works, I pass to a man whose fame rests on one work alone, and to whose life, from its humble origin to its tragic end, such a romantic interest attaches. I refer to George Meikle Kemp, the creator of that fairy-like structure, the Scott Monument, in Edinburgh. Kemp was the son of a shepherd. He was born at Moorfoot, near the southern boundary of Midlothian, in the year 1795, and up to the age of fourteen assisted his father on the hills. He was apprenticed to a carpenter at Redscaurhead, near Peebles, and after serving his apprenticeship procured employment at Galashiels as a millwright. It is related that while on his way to Galashiels Kemp was overtaken by a carriage, the occupant of which directed his coachman to stop and ascertain how far the burdened traveller was going. On receiving the desired information, Kemp was asked to take a seat beside the coachman, and was driven to Galashiels, where, on his alighting, he found he had been riding with Walter Scott. Little would the great magician think that the youth, who tendered his thanks so modestly, would some day conceive and fashion the monument which was to embody Scott's countrymen's tribute to his genius. Once afterwards, while sketching at Melrose Abbey, Kemp saw Scott, who looked over his shoulder at his drawing, but Kemp was too timid to speak. Some of the drawings then made were afterwards utilized in the Scott Monument. Kemp wrought at his trade in various parts of the country, including Glasgow, Edinburgh, Lancashire, and London, settling generally where he could study specimens of Gothic architecture, and he often made long journeys on foot to accomplish his object. On one occasion he walked fifty miles to York to examine the beautiful Minster. Though it was night when he arrived, and sorely fatigued, he could not think of rest or refreshment until he had feasted his eyes on the noble building, whose grandeur and beauty had attracted him to its presence. Fortunately a bright moon illumined the scene, and bathed the stately structure in its mystic silvery light. The scene acted on Kemp like a spell, and he was so entranced by the spectacle that daylight had long appeared before he could tear himself away. He crossed to France in 1825, intending to travel through Europe, while maintaining himself as a millwright, but had only reached Paris when the news of his mother's death recalled him to Scotland. Failing to make a business of his own as a carpenter and joiner in Edinburgh, he ultimately became a draughtsman, and was employed to prepare drawings for a projected volume of Scottish ecclesiastical remains, similar to Britton's "Cathedral Antiquities." This work was abandoned, however, as was also a project to complete Glasgow Cathedral, for which Kemp prepared drawings and a model. In 1836 the first competition was held for the Edinburgh Scott Monument, and the third place was awarded to Kemp's design, which he submitted under the name of "John Morvo," a name taken from the old inscription on the walls of the south transept of Melrose Abbey. A second competition took place, and in 1838 Kemp's design, meanwhile greatly improved, was adopted. He did not live to see the completion of his great work. On his way home in a dense fog on the night of 6th March, 1844, he stumbled into the canal and thus tragically met his death. His body was found the following week and interred in St Cuthbert's Churchyard, where a monument with a medallion portrait was erected to his memory by public subscription.

DAVID BRYCE.

David Bryce, the son of a builder in good business in Edinburgh, was born in that city in 1803. He was educated at the High School there, and the aptitude for drawing which he early displayed induced his father to devote him to the profession of architecture. After receiving a thorough practical training from his father, he passed into the office of William Burn, whose partner he soon afterwards became. The partnership was dissolved, as I have already mentioned while treating of Burn, on the latter's removal to London in 1844, and Bryce succeeded to a very large and increasing practice, to which he devoted himself with all the enthusiasm of an artistic temperament and untiring energy. In the course of a busy and successful career, which was actively continued almost down to his death, he attained the foremost place in his profession in Scotland, and designed important works in most of the principal towns of the country. Among his earliest works were the ornate British Linen Co.'s Bank in St Andrew's Square, Edinburgh, and the Western Bank, in the same square, now the Scottish Widows' Fund Building, one of the most beautiful frontages in Edinburgh. There shortly followed the Clydesdale Bank at the corner of George and Hanover Streets, the Subscription Library in George Street, the North British Insurance offices in Princes Street, and many others. Latterly we are indebted to the genius of Bryce for some of the finest modern buildings in Edinburgh, such as Fettes College, the Bank of Scotland, the Sheriff Court House, and the new Royal Infirmary. These buildings form of themselves a splendid monument to any architect. Bryce worked in many styles and was successful in all. At first he devoted himself to a severe classical style, as might naturally be expected from a pupil and partner of Burn. He soon devoted himself more exclusively to the Scottish Baronial, of which he became latterly the most distinguished exponent. It was in this style that his greatest successes were achieved, particularly in the erection of mansion houses throughout the country, of which at least 50 testify to his skill in this class of work. The best of his public buildings in the Scotch style are probably Fettes College and the Royal Infirmary in Edinburgh. When for a period of 25 or 30 years he had enjoyed the proud position of being the foremost architect in Scotland, Bryce died, after a short illness, in 1876 at the age of 73. At his death he left many important works in course of erection, which were subsequently completed by his nephew, who had been for some years his partner, and who succeeded to his business. Bryce was a man of varied accomplishments, and, though somewhat rough in manner, of a genial and warm nature, which procured him the esteem of both servants and employers.

CHARLES WILSON.

The last six lives I have sketched were those of Edinburgh men, but I now return to our own city and will dwell briefly on three distinguished Glasgow architects, viz.:—Charles Wilson, John T. Rochead, and "Greek" Thomson, with the last of whom I will conclude this paper. Charles Wilson was the son of a builder in Glasgow, and was born there in 1810. At the age of 17 he became a pupil of David Hamilton, and was for some time Hamilton's chief assistant. While in this position, Wilson had the good fortune to be engaged on Hamilton Palace, Lennox Castle, Toward Castle, the Royal Exchange, Campsie Parish Church, St Paul's Church, the Normal School, and other large, though less noted, works. In 1837 he began business, and in that year designed Hutchesontown Church, Hospital Street. In 1839 the church at Strathbungo was built from Wilson's designs, and about the same time a church of Greek design in Calderwood Street, Parliamentary Road. A list of his executed works is a somewhat lengthy one, and includes many important buildings in the city, among them being the Royal Lunatic Asylum at Gartnavel; Windsor Terrace, Great Western Road; the Glasgow Academy, now the High School, in Elmbank Street, one of his best designs; Shandon House, Gareloch; the Gateway at the Southern Necropolis; Free St Peter's and St Stephen's Churches; Royal Bank Buildings, Buchanan Street; Faculty of Procurators' Hall in George Place, perhaps his finest work; laid out Kelvingrove Park in conjunction with Sir Joseph Paxton; Park Terrace, Gardens, and Circus, with the fine granite stairs there; Free Church College and College Church in Lynedoch Street; the Queen's Rooms and La Belle Place adjoining; Thornliebank House; Lewis Castle at Stornoway; Raasay Castle, Island of Raasay; Rutherglen Free Church and the Town Hall there; Free Churches at Rothesay, Melrose, &c.; at Oban the Great Western Hotel, and at Paisley the Neilson Institution, besides a great number of other churches, mansions and town properties. A very able paper on Wilson's works was read to this Section 25 years ago by Mr David Thomson, a former President of this Section. The paper is printed in the *Proceedings* of the Philosophical Society Vol. XIII., to which I would refer those who wish to make a fuller acquaintance with Charles Wilson and his works. Wilson died at Glasgow in 1863, at the comparatively early age of 53.

J. T. ROCHEAD.

John T. Rochead, though born in Edinburgh, I have claimed as a Glasgow architect, as it was here that he set up in business and was largely employed for thirty years. Having early manifested a taste for architectural studies, he was, at the age of 16, placed in the office of David Bryce. On the termination of a seven years' apprenticeship, he was assistant for two years in a Doncaster office. Having been successful in a competition for a Roman Catholic Cathedral at Belfast, Rochead began business in Glasgow. Among his best known works are St John's Free Church, George Street, for which he is said to have competed with Kemp; Queen Margaret College, Buckingham Terrace, the U.P. Church at the corner of John and Cochrane Streets, Park Church, the Unitarian Chapel, and the well-designed baronial building in the Trongate, at the corner of Nelson Street. Rochead's name will always be chiefly associated with the Wallace Monument on Abbey Craig, Stirling, which he obtained after two competitions, in which he was successful against seventy competitors. In the early part of his career, when so many new churches were called for by the Disruption, he became especially prominent as an ecclesiastical architect. Besides the Park Church and the others I have mentioned, he designed the Parish Church, Renfrew, and St Mary's Free Church, Albany Street, Edinburgh. In the War Offices competition of 1857, Rochead's plans were awarded the second premium.

ALEXANDER THOMSON.

Of my last subject, Alexander Thomson—better known as "Greek" Thomson—I need perhaps say but little; no architect's works are better known in Glasgow, not only in the profession but among the general public. He gave us a series of designs of a character so unique and excellent as to excite our wonder at the richness and vigour of his imagination. The multiplicity and variety of the details and forms he introduced into his works, and the singular grace and unity of effect he maintained throughout, are deserving of all praise. Thomson was a native of Balfron in Stirlingshire where he was born in 1817. His father was a book-keeper in a spinning mill at Balfron, and his mother was a sister of the Burgher minister there. Young Thomson came to Glasgow in early boyhood and began life in a lawyer's office, where he served for some time, but Robert Foote, a Glasgow architect, on seeing some drawings of Thomson's, took him as an apprentice. He thence removed to the office of the late John Baird, senior, where he remained 13 years. He next started business on his own account in partnership with John Baird, junior, who was his brother-in-law, both having married granddaughters of Peter Nicholson. The partnership lasted nine years, at the expiration of which period he joined his brother George, under the firm of A. & G. Thomson, and Mr Turnbull was afterwards taken in as a partner. Thomson never had the opportunity of erecting a great building; but whether he designed "shops and tenements, merchants offices, rows of houses, or U.P. Churches, he made every building remarkable, and impressed it with the stamp of his genius." His principal works in Glasgow are the United Presbyterian Churches in St Vincent Street, Caledonia Road, and Queen's Park, the Egyptian Hall in Union Street, Great Western Terrace, and a number of warehouses in Gordon, Bath, and Sauchiehall Streets. Thomson died at Glasgow, on 22d March, 1875.

In conclusion, I have but to express the hope that the lives and works of these architects, however inadequately treated, may not have been without some interest to you. I have not been able to say anything new regarding them; my whole work being merely to gather together from various sources the necessary information to put these brief sketches before you. Time has compelled me to omit many names I should like to have included, such as Craig, Reid, Henderson, Cousin and Rhind of Edinburgh, and Foote, Collie, Carrick, Burnet, Sellars, Baird, &c., of Glasgow, but these might form a suitable topic for another occasion.

The Construction of Permanent Magnets from Specimens of Nearly Pure Copper. By James G. Gray, B.Sc., Secretary of the Mathematical and Physical Section, and Lecturer on Physics in the University of Glasgow, and Alexander D. Ross, M.A., B.Sc., Assistant to the Professor of Natural Philosophy in the University of Glasgow.

[Read before the Mathematical and Physical Section, 29th January, 1908.]

The metals iron, nickel and cobalt exhibit such marked magnetic properties that they are commonly referred to as constituting the group of magnetic elements. Yet it is well known that when a very intense field and delicate methods of observation are employed most of the other elements show some susceptibility to the action of magnetism, and acquire by influence magnetic polarity. The permanent magnetism which they retain is, however, almost or altogether inappreciable, and hence there is sufficient justification for the customary classifying of substances into a "magnetic" and a "non-magnetic" group.

So far no essential difference has been detected between metals of the magnetic and those of the non-magnetic classes. Recently it has been found that alloys of various members of the latter group may exhibit magnetic properties much more pronounced than those of their constituents. Such a substance we have in the Heusler alloy of copper, manganese and aluminium.

It therefore seemed possible that by special treatment of the pure substances their magnetic properties might be greatly enhanced. With this end in view the authors have carried out the following experiments on copper—that element being selected on account of its general importance and as being a constituent of the Heusler alloy.

For magnetising the specimens the large electro-magnet of the Glasgow University Physical Laboratory was employed. The magnet is of cast-steel with a permeability almost coincident with that of wrought-iron. It is rectangular in shape, measuring about three feet in length and about 15 inches in height. The whole length of the yoke is wound, in addition to the smaller coils, on the poles. The wire is of No. 9 standard wire gauge and can thus carry a continuous current of over 16 amperes. Although the conical pole pieces had to be widely separated in order to admit the specimens and the various vessels employed in the experiments, a field of considerably over 3000 C.G.S. units was given with the current mentioned above.

In the earlier experiments specimens of high conductivity copper were employed. A short bar was placed longitudinally between the poles of the electro-magnet and a field of 3000 units applied. On thereafter testing the specimen with a sensitive magnetometer no trace of residual magnetism could be observed. The magnetising process was repeated, the bar being hammered while in the field so as to produce vibration of the molecules. On retesting the specimen there was still no evidence of retentivity.

A vacuum vessel containing liquid air was now placed between the poles of the magnet. The copper specimen was placed in this and thoroughly cooled down to – 190° C. The magnet being then excited as before, the specimen exhibited a very feeble trace of residual magnetism.

The effect of heating the copper prior to the application of the magnetic field was next investigated. In connection with this procedure it is interesting to note the great differences between the effect of heat on copper and on iron and steel. Heating to a high temperature followed by slow cooling softens iron or steel, but renders copper brittle. Quenching at a high temperature has a marked hardening effect on iron and steel, but greatly softens copper and lessens its elasticity.

A copper specimen was raised to a bright red heat, slowly cooled, and then subjected to a magnetising field of over 3000 units. It exhibited no trace of permanent magnetism. A repetition of the thermal treatment with the magnetising field applied throughout gave the same result.

A specimen was next quenched in cold water at a bright red heat. The same magnetising field was then applied, and the bar tested. The magnetometer now showed a considerable deflection. Tests were thereafter made to see whether a better effect could be obtained by quenching the copper in the field, but no appreciable alteration was observed in the amount of residual magnetism. Another specimen was heated to about the same temperature and quenched in liquid air. The retentivity of this specimen was found to be much less than that of those quenched in water. This is probably due to the fact that the quenching was less sudden. When the hot specimen came into contact with the liquid violent ebullition took place, but quickly ceased as a layer of badly conducting air formed between the specimen and the liquid air.

Further tests were carried out using quenched electrolytic copper sheet. The sheets had a thickness of less than 1/30th mm., and hence could be quenched very rapidly. They gave a considerably better result than the block copper.

These specimens have been carefully analysed by Dr C. E. Fawsitt of the University of Glasgow. The electrolytic sheet copper was probably slightly purer than the block copper and certainly contained less than 4 parts in 10,000 of iron. The intensity of the residual magnetisation after the quenching treatment was about 0·14 C.G.S. unit, and it would therefore require at least 20 parts in 10,000 of highly magnetic iron to account for the effect produced.

Six specimens of the electrolytic copper which had been quenched at a bright red heat were used in an investigation of the retentivity of the copper at room temperature and at the temperature of liquid air. Each specimen consisted of a portion of the sheet measuring 27 by 6·2 cms., and was rolled into the form of a thin cylinder of length 6·2 cms. The results obtained with the several specimens were in very good agreement considering the unavoidable differences in the temperatures and rates of quenching, and the cracking of the material under this severe treatment. The following figures represent the mean values obtained for the intensity of magnetisation in C.G.S. units. (In calculating these the polar distance has been assumed to be 5/6ths of the total length of the cylinder):

Specimen as supplied, ...	0·00
Quenched and remagnetised, ...	0·14
Cooled to − 190° C., and remagnetised, ...	0·27
On warming up to room temperature, ...	0·14
Again cooled to − 190° C., and remagnetised, ...	0·26
On warming up to room temperature, ...	0·13

In the tests at − 190° C. the specimens were contained in small glass tubes closed at one end and turned up at the open end. These were wrapped round with cotton wool and filled with liquid air. The gradual deterioration of the specimens shown in the foregoing table is probably to be ascribed to the cracking of the copper. The specimens were also tested between 15° C. and – 190° C. and the retentivity was found to be greater the lower the temperature.

The residual magnetism of the quenched copper is little affected by moderate vibration. If a specimen is hammered, however, the residual magnetism can be greatly reduced, but after remagnetisation the retentivity is found to be practically unaltered. It is noteworthy that specimens of quenched copper which have been hammered until they are again hard and elastic, retain, on magnetisation, almost as much magnetism as the freshly quenched material which is extremely soft and inelastic.

Heating the quenched copper tends to reduce its residual magnetism. Several specimens which had been quenched at a bright red heat and magnetised were tested after successive heatings to 100°, 400°, and 600° C. In each case the specimen was slowly cooled from the high temperature and tested when at about 15° C. It was found that after heating the copper to 100° the residual magnetism had been reduced to about 60 per cent. of its initial value, after heating to 400° to about 30 per cent., and after the heating to 600° the specimens exhibited almost no trace of permanent magnetism.

Specimens of quenched copper which had been subsequently heated to a bright red heat and slowly cooled showed little or no indication of retentivity after the application of fields up to 3500 C G.S. units.

With a view to obtaining a very pure specimen of copper the authors proceeded to build up a bar by electrolysis, using the electrolytic sheet copper for the anode plates. The kathode plate consisted of an extremely thin sheet of the same material. The electrolytic cell was filled with a solution of iron-free copper sulphate of specific gravity 1·15 and a little over ½ per cent. free sulphuric acid was added. The cell was placed between the poles of the electromagnet and a constant field of 2200 C.G.S. units was maintained during the 2½ days that the experiment lasted. The amount of copper deposited was about 30 grammes. At the close of the experiment no trace of residual magnetism could be detected in the bar. Quenching at 700° C. in a field of 3300 units also failed to leave any permanent magnetism.

While this last experiment would tend to show that the retentivity exhibited by the electrolytic sheet copper was due to the presence of impurity, it certainly cannot be ascribed to the iron acting as free-iron as is shown by the chemical analysis and by the peculiar behaviour of the specimens in liquid air. Possibly the iron when present in excessively low proportions forms with the copper a compound which is magnetic. It is well known that the electrical properties of copper are strongly affected by the presence of traces of impurity. The presence of a minute quantity of antimony, for example, considerably lowers the electrical conductivity of copper.

There has been much discussion recently as to the part which copper plays in the Heusler alloy. As has been shown by the authors* a quenched specimen of the alloy exhibits greater retentivity at liquid air temperature than at ordinary temperature, and the increase is very noticeable in the case of quenched specimens. This effect, which is exhibited to a marked degree by the specimens of nearly pure copper, is not a feature of the commoner magnetic materials.

The experiments described above have been carried out in the Physical Laboratory of the University of Glasgow, and the authors desire to express their thanks to Professor Gray for suggestions made during the course of the work. They also wish to acknowledge their indebtedness to Dr Fawsitt for his kindess in undertaking the analysis of the specimens of copper used in the investigation.

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* *Proc.* Roy. Phil. Soc. Glasgow, XXXVII. p. 125, and XXXIX. p. 41.

Delitiae Poetarum Scotorum. By T. D. Robb, M.A.

[Read before the Historical and Philological Section,
19th February, 1908.]

I was first led to look carefully into these two compact duodecimo volumes by a footnote in Professor Hugh Walker's "Three Centuries of Scottish Literature." The note is added to a general reference to what the author calls "the vast amount of very respectable talent" lost to Scottish literature by the exercise of Latinity; and it says "The *Delitiae Poetarum Scotorum* represents a world of forgotten lore and buried power." That was interesting and tempted investigation. The authors represented in the *Delitiae* wrote at a time when Scotland was rather barren of good vernacular literature, and it seemed worth while making inquiry to find if the barrenness was to be explained, even in part, by men of poetic power spending their voices in Latin verse.

Before this I knew of the work only as one among those read by Scott's fictitious but very real Baron Bradwardine. That it was to be found in the old gentleman's library was no proof that it must contain good poetry, for the Baron's preference in literature was for matters of fact in matter-of-fact language. "Though a great reader," says Scott, "he sometimes could not refrain from expressing contempt for the vain and unprofitable art of poem-making." Still the presence of the volumes on his book-shelves did not argue that their contents must be unpoetical. For, as we are told, "he read the classic poets, and the *Epithalamium* of Georgius Buchanan, and Arthur Johnston's *Psalms* of a Sunday; and *Delitiae Poetarum Scotorum*, Sir David Lindsay's *Works*, and Barbour's *Bruce* and Blind Harry's *Wallace*, and *The Gentle Shepherd* and *The Cherry and the Slae*." What one infers is the respectability of the *Delitiae* in the Baron's eyes. All these are standard works: the list makes a fair roll of honour up to that date, not exhaustive yet very considerable; and the appearance of the *Delitiae* in the list proves that it was in those days regarded by scholarly gentlemen as a standard work.

Those days are gone, and the volumes are hardly even a name.

Even those who own them do not always seem to know what they are. The other day, while looking over the catalogue of a public library that boasts of over thirty thousand volumes, I was arrested by their name, but was amazed to find that they were part of a list of works attributed to George Buchanan. There is not a line of Buchanan in the whole work, though here and there one finds the echo of him, and, in one part, Adam King's completion of Buchanan's unfinished *De Sphaera.* But enough of preamble.

The *Delitiae Poetarum Scotorum hujus aevi illustrium*, forms one set of a collection of the Latin poetry of the principal European nations at the beginning of the seventeenth century. The complete collection you will find in sound slumber on certain of the top shelves of the second floor of our University library. After first inspecting them I had to beg the librarian to show me where I might wash off the "ancient, peaceful, quiet dust" that thickly soiled my hands. The inspection discovered some thirty-seven volumes. Of these no less than thirteen contained the works of German poets; six were Italian; six, French; two, Danish; seven, Belgian; one, Hungarian; and two, Scottish. There were no English. But though they make one collection, they are not the result of one enterprise. The German, the Belgian and the Hungarian were all published at Frankfort, and all at the expense of the same Maecenas, Jacobus Fischer. The Italian and the French bear no indication of the city they were published in, but have the same wood-cut on the front as the German, though they bear the name of a different publisher. The Danish collection, like the Scottish, is a Dutch publication; but while the Danish was printed at Leyden, the Scottish was printed at Amsterdam, and they are by different publishers. The strange thing is that there is no Dutch collection. Was there none?

Confining ourselves to the Scottish collection, we find that it differs from the others in one respect: its title-page does not bear the name of the editor. Every other names the Editor, or, as they call him, the *Collector.* May I task your patience for a word or two on that topic before proceeding to the contents? It seems not unnecessary to do so, for it has come to be regarded as quite a settled matter who the Editor was. In the Dictionary of National Biography, it is stated plumply that the volumes were edited by Arthur Johnston. No authority is given. In the October issue of *The Scottish Historical Review*, the assertion is made with the same nakedness. The Rev. W. Caird Taylor, in his article on "Scottish Students at Heidelberg," had occasion to write of Arthur Johnston, and among other things he says, with mere assertion, "He also edited at Amsterdam in 1637 *Delitiae Poetarum Scotorum.*" On reading that, I wrote the author to ask if he would favour me with his grounds for the statement. He courteously did so, giving quotations from two German biographical dictionaries. Neither, however, does more than make the statement, the first quite nakedly, the second with the additional remark that the work is in two duodecimo volumes. The dates of the two dictionaries are respectively 1750 and 1784. At the end of his letter Dr Taylor adds: "I have seen the same statement made in *The Scottish Nation* (1862)." Apart from Dr Taylor and the Dictionary of National Biography, the only other authorities I have found for the assertion are David Irving and M'Crie. In his "Lives of Scottish Poets," Irving has occasion to speak of the *Delitiae* and refers simply to "the Editor Dr Johnston." The date is 1804. But in 1839 he is more cautious. In that year he published his "Lives of Scottish Writers," and in his article on Johnston, he says that "He *lent his aid* to the publication of the *Delitiae Poetarum Scotorum*"; adding further down, "Johnston has frequently been considered as the Editor from the circumstance of his having written the dedication to Scot" (*i.e.*, Sir John Scot of Scotstarvet, who was at the expense of the publication), "and prefixed the *Musarum Elogia* addressed to the same individual." As to M'Crie, I find this in his "Life of Andrew Melville": "The whole of the work" (*i.e.*, Melville's *Stephaniskion*) "was deemed worthy of being included in the selection of Latin poetry by Scotsmen, published at a subsequent period under the direction of Arthur Johnston."

In spite of these statements, I would humbly take leave to wonder whether the question has been fully considered in the light of the internal evidence of the work itself. Irving seems to have had his doubts, though he does not spare time to discuss them; and he probably hits the truth when he says that Johnston only "lent his aid." The real editor seems to me to have been Sir John Scot.

As the Dedication acknowledges, it was by Scot's suggestion and at his expense the collection was made. It was an act in keeping with the rest of his life. The Director of Chancery, he found himself "a busy man in troublous times," but he insisted on finding time for the study and cultivation of letters. In 1620 he endowed the Chair of Latin in St. Andrews, and this was but the first of several acts of liberality to learning. During a visit to Holland he formed a friendship with the Amsterdam publisher, Blaeu, and incited him to emulate the work that had recently been done by the German press of Frankfort in the publication of those *Delitiae* I have referred to as emanating from that city. The patriotic enthusiasm of Scot was not to be denied; and, on his guaranteeing the expense, the work proceeded. When completed, it bore on its title-page no editor's name, and in this respect differed from all the others.

Yet if you look at the Dedication you will find a passage from which one would naturally conclude that Scot himself was the *Collector*. It is addressed by Johnston to Scot and may be translated as follows: "This uttermost corner of the earth, lying almost at the pole, was made illustrious by that first poet of his age, Buchanan. Now that that sun has set, you adorn it wondrously with new stars, among which you yourself shine bright. Of these not a few are of the first magnitude, and in their splendour emulate those greater luminaries which shone in the Augustan age. A countless host of poets offered themselves for your consideration. But a selection has been made, and in that selection *I admire no less the care of your judgment* than the eloquence and brilliance of those poets *whom you have selected.*"

Again, we find in the *Parerga*, or Occasional Poems, of Johnston one in which he urges Sir John to get on more expeditiously with his undertaking:

> "O Scot, commit more quickly thy Caledonian Poets to the press, and bravely accomplish the journey thou hast begun."

Scot, as I said before, quoting Sir James Balfour, "was a busy man in troublous times," and that may explain the delay. But it seems quite clear that he had not let the thing out of his own hands. His snatches of leisure he seems to have filled up with literary employment, as we find both from his own verses and the witness of Johnston in his dedication. "The pains you have taken," says Johnston, "not only confers life and immortality upon these poets, but brings yourself undying fame. For what is more laudable in a man of eminence, engaged in public affairs, than that he should consecrate to literature those leisure hours which most men waste in gambling or debauchery or sleep?"

A Dedication is, of course, usually written by the author or the editor of a book; but in this case the strength of that argument is lessened by the fact that other two men write introductions in the form of eulogies on Scotstarvet. Johnston, too, has in his *Parerga* yet another poem that appeals to Scot as editor: "Alas, dear Scot," it begins, "what crime have I committed? Why do you cruelly drag the name of your friend into disgrace and mockery? Why will you now insist on publishing things I had forgotten, verses I wrote when far from the sacred rock and happy waters?" When one notes, too, that the poems of Johnston included in the *Delitiae* far exceed any of the others in bulk, one finds it strange to believe that he was the *Collector.* Tradition may not lightly be discarded, yet such considerations as I have offered surely make it probable that David Irving's modified statement that he "lent his aid" is the most we may suppose. Scot not only was at the expense: he gave time and trouble both to collection and to selection; and Johnston, at the most, was probably no more than his friend in council.

As to the work itself, permit me first to give a rough sketch of its contents. You will not find such a thing as a table of contents at the beginning nor an index at the end, and it is therefore very difficult to form a general impression at a glance. The only summary is a list of the authors at the end. There are thirty-seven all told, the same number oddly enough as that of the volumes in the total collection, and the same as the year of the seventeenth century when the work was published, 1637. That by way of mnemonic.

If you look at the two volumes, you will hardly be prepared to learn how much they contain. There is a total of 1272 pages. A full page contains 39 lines, and if each page were full there would be a total of almost 50,000 lines. As it is there are at least 43,000.

Of these, nearly 8000 are addressed to Royalty, and the Prince is in most cases James VI. and I. Nearly 3,000 more are in praise of great nobles. Verse in memory of the dead—who are generally "princes, prelattis, potestatis"—number about 2,500 lines. These three items, amounting to nigh a third of the whole, may be headed *Adulation.*

Somewhat akin, as being generally poems of Praise, comes Sacred Verse. These count 7,000 lines, or about a sixth.

Legendary and historical poems come next with a total of about 4,000 verses. Among "Historical" I include not only such poems as dealt with matters of history at the time they were written but themes like the Gunpowder Plot and the Murder of Buckingham, which were then matters of the hour, but are now of historic interest.

Poems on themes of scientific and philosophic interest come next, and number between three and four thousand lines. You will understand their nature when I say that they chiefly consist of Adam King's verses intended to complete the unfinished books of Buchanan's *De Sphera*, and of David Kynloch's treatises on the *Propagation of Mankind* and *The Anatomy of the Human Body.*

Under the next head I would rank Poems that are mere imitation of classical models. It is a general objection to the Latin poets of that day that they were directly imitative of classical writers. Very few of these thirty-seven poets are free from the charge; but under the heading of Mere Imitation in theme and architecture and phrase, I have detected verse amounting to only some 2,500. Fifteen hundred are mere echoes of Ovid, about nine hundred are in pure imitation of Virgil's *Pastorals*, and a hundred lines or so imitate Catullus. Some of the other poems, though modern in their themes, are directly indebted to the Classics in construction and phraseology, and sometimes in sentiment. I would not venture to disentangle the number of such passages—that would be too great a labour—but the number is certainly great. I merely enumerate under this head the naked and unashamed.

In most Anthologies a large portion is devoted to the theme of Love. It is apt to predominate. In this collection it commands little more than 400 lines, if you exclude certain "fusionless" imitations of Ovid already mentioned.

There still remains fully a third of the total, some 13,000 lines that a greater patience might subdivide, but I am content to slump them together as *Miscellaneous.*

Such is the rough analysis. The poems, I need hardly say, are not grouped under these headings. Each of the thirty-seven authors has his own place; I have merely tried to assort the general contents.

A literary critic, glancing at such a list, would hardly, I fancy, be much attracted to the volumes; he would fail to respond to any rhetorical reference to the iniquity of oblivion. And there is no denying that the total looks rather stodgy. Many a time one was tempted to put the volumes aside and waste no more eyesight on their small print. But if good literary finds were comparatively few, the spirit of exploration was kept alive by occasional appeals to the historical and antiquarian instinct. If Scot and Johnston are both responsible for the collection, it is not easy to say which is most to be blamed for the general impression of doughiness. Neither was himself stodgy. Johnston's numerous contributions are such that had he lived nowadays, one feels he might have made a bright journal-essayist, who occasionally indulged in verse. Scot is harder in the grain, with a turn for caustic epigram. Johnston is more pedantic, but he is also the more genial, and if he had had his way I am sure the spirit of selection would have been more generous towards love lyrics, which form so scanty a proportion as to make the volumes exceptional among anthologies. It is a theme congenial to Johnston, but to Scot merely a matter for scorn. In his poem in praise of Ovid, Sir John is careful to say that though he reads him daily, it is not for anything Ovid has to tell of Cupid and Venus. "I knew all that when a youth," he explains; and for contemporary love lyrists of the conventional type, he has nothing but scorn. He addresses them in a Latin epigram that rebukes their barrenness in words that may be thus roughly translated:

Your "Quivers and arrows of Cupid,"
  Your "Sweet thefts of the Paphian Queen,"—
Take these from your verse, my dear poets,
  And what is there else to be seen?

In another poem, called *A Dream*, he sees Venus stand at his bedside and hears her ask: "What joy is there in forever following Art and the Muses? Why trouble your mind and deaden your heart with studies so severe? These are trifles. Come, follow me, and I will be your companion through pleasant places." He awakens and scorns her and her wiles. "Sooner shall the sun rise from the Western wave and bathe his steeds in the Eastern ocean than I yield to the darts of Cupid or submit my neck to the Paphian yoke." From such things and from his cynical verses on *Venus and Vulcan* one may probably attribute to the influence of Scot the small space given to amatory verse, and the frequently coarse quality of such amatory verses as are included. There is little or no evidence of the genial and generally refined temperament of Johnston in such selection and rejection. Possibly nothing very fine of that kind has been lost, but if as severe and as cynical a censorship had been exercised in other departments, the total would have been the smaller by many thousand lines.

Such a stricture applies especially to that large section that may be entitled Poems in Adulation of Blue Blood. I shall not detain you with many examples. David Hume's verses to Queen Elizabeth may be taken as the type of many others. Without the music of its numbers, they read something like this: "When Mars of late was visiting the warlike English, he saw thee, and believed thou wert his darling Venus. At once he made to embrace thee, and to repeat his wonted kisses; but virgin modesty suffused thy face. That gave him pause. It was something new, and he saw his blunder. 'So,' said he, 'a daughter of the golden-haired Britons makes me err and mistake her for Venus! And she who of yore was the fairest in all heaven now finds her equal on earth!'" That sort of thing may have its excuse when addressed to a lady, but one tires of equally fulsome flattery addressed to James, and it is here in scores of pages. At the same time we may spare our indignation and disgust, so long as our Universities acknowledge the visits of princes with the bestowal of most irrelevant degrees. Such poems doubtless meant no more, and were generally taken to mean no more, than these capping ceremonies do nowadays when Royalty pays a call to some University city. If it was absurd to liken James to Mars; it is the same thing to call the Prince of ——— a Doctor of Laws.

Yet, when all due disparagement is made with regard to such poems of adulation, it remains to add that several are above contempt, and that some few express very democratic theories of government. One argues that the passport was good Latinity. As Scot confessed that he read Ovid not for what the Latin poet had to tell him but for what was best in his numbers—in other words for his smooth Latinity—so he seems to have in general admitted many a poem into his collection without much regard to the substance. (I shall not enter here into the fine question whether substance and form may, in true poetry, be separately considered.) Good Latinity seems to have been the main test in very many cases. There are, for instance, poems addressed to James that contain the plainest utterance of that democratic spirit to which George Buchanan gave expression in his *De Jure Regni.* Take the first of the four *Sylvae* of Thomas Maitland, the brother of that William Maitland of Lethington, whose character is discussed so favourably in the current number of the *Scottish Historical Review.* Thomas is the same Maitland whom Buchanan has employed as his interlocutor in the *De Jure Regni.* It suited his purpose later—when he joined in the attempt to win Mary from captivity in England, and to restore her to the throne—to declare that Buchanan had merely consulted his own fancy in using his name in that dialogue. But this *Sylva*, written to celebrate the inauguration of the boy James, is full of that very spirit Buchanan attributes to him. After much of courtly compliment and congratulation, he turns to advice and, in language of uncompromising severity, warns the child-monarch to beware the fate of tyrants. Scotland, while loyal to good kings, has never brooked a despot. As Syracuse treated Dionysius, as Rome treated Tarquin and Cæsar, so Scotland has never suffered a tyrant to infringe her laws.

Non tolerat, sed fama volat, subitoque tumultu
Accensi heroes virtusque armata popelli
Sceptra rapit, mox dejectum de sede tyrannum
Nunc morte horrifica, saevo nunc carcere fraenat.

But though there is no ambiguity in this passage, it forms only the closing part of a poem of some 400 lines, and from a study of the whole it is clear that Maitland, like most people, had two souls in his breast, and that while these were his theoretical opinions, he had a lurking kindness for Mary as a woman. There is quite a beautiful passage, near the beginning, which shows this clearly. The reference is to the sequel of the battle of Langside, and he is addressing young James: "Scarce had the moon renewed her pallid horns after thy throng of gallant heroes had won their joyful victory over the foe, when the fairest of fair women, thy mother, tired with more than the labour of Hercules, laid aside her ancestral crown. As Atlas, bowed beneath the weight of the sky, sought another to support the burden; as a bark, long tossed about by jostling blasts, seeks a quiet haven from the wrecking sea, so she, thy lady mother, stript herself of power, and consigned the burden to thee."

There is a tenderness for Mary in that passage which helps one to a more charitable construction of Maitland's seeming inconsistencies. Buchanan doubtless interpreted one part of his mind quite truly;[1] that passage and his later conduct interpret the other. It is a very weak thing to talk of inconsistency in view of the complexity of human nature.

This, however, by the way. But perhaps the reference to Maitland may show that in the pages of the *Delitiae* one may find an occasional sidelight falling on the twilight uncertainties of History. It may show also that the Poems addressed to Royalty are not all trash. Take, for another proof, the *Stephaniskion* of Andrew Melville, a poem in celebration of the coronation of James VI.'s Queen Anne. Melville had received an invitation to be present at the ceremony only two days before, and seemingly the King conveyed a hint with the invitation, and the poem was produced within twenty-four hours; for apparently it had to be submitted to the King for approval. This we gather from some verses *Ad Regem* apologising for the poem as a production of haste. "What you ordered yesterday I have finished to-day: to-morrow it will appear before the world." Perhaps the haste of the composition was the cause of its excellence. There are diffuse passages that obviously owe their straggling construction to haste, but here and there are passages direct, simple and vigorous, such as he would not have written had he laboured at leisure. For his more careful efforts in verse are frequently marred with straining after clever literary effects. Listen to these two lines from another poem:

Qui sponsus sponsae morientis morte mariti
Viventis vita, ac redamantis amantis amore.

In the *Stephaniskion*, he had no time to be pettily clever. It is the work of one who had a gift of nervous language in moments of high pressure. As to the tone of the poem, there is the spirit of adulation, but it is adulation of the ideal king and it is mingled with kindly sympathy for the human being who is called to the high, and perilous, and anxious task. The man who afterwards told James he was but "God's silly vassal" had a warm side to his "lordly fellow-worm," and spoke in terms of honourable frankness from the beginning. He begs the young king as he loves his own welfare, and that of his kingdom, to hearken to words of advice. In particular, he entreats him to give no ear to the crowd of flatterers who would poison his mind with suggestions that he stands outside of and above the law. "They will tell you," he says, "that the will of the king is a law unto itself and to his Kingdom. Such words come from the deadly mouth of Hell. Does a king rule slaves? Is he a tyrant or the father of his people? Is he not the guardian of the people, the sacred and holy minister of just laws? A king does not live for himself. He who lives for himself is a brute animal; he is worse, he is a savage beast."

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[1] That Maitland, when he wrote the first *Sylva*, may well be regarded as an admirer of Buchanan, is clear from the passage in praise of Scotland and the Scots, beginning

Nec tamen hic gravidis fulvi de montibus auri
Pondera, caerulei aut venas memorabo metalli.

The whole passage is an echo of the well-known patriotic outburst in Buchanan's fourth *Sylva*, the *Epithalamium*.

> Est pecus, est pejor pecude, est fera belua, soli
> Qui sibi se natum credit.

Thereafter, with fine rhetorical praise of that king who is willing to give ear to the voice of wisdom, he passes to words of courteous congratulation to James and his bride, and augurs all manner of good to them and their posterity while they live under the laws of Christ.

There are many and various poems by Melville in these selections. They prove that he had great poetic powers, ranging from the grand vein to that of the pensive lyrist. But he gave his heart to Church politics. Had he devoted himself with equal ardour to letters, and had he condescended to write his native tongue, one may hardly doubt that his works would have been marked by rugged manly eloquence and, at the same time, by the quiet charm of tuneful meditation. For excellence in this last vein, I would especially commend the promise of that lyric entitled *Musaeum.*

A word now on Poems Legendary and Historical. Perhaps, more than anything else, you would like to know the subjects treated. The principal contributor in this kind is John Johnston, brother of Arthur. He has two series of poems, the one on the kings and the other on the heroes of Scotland. They are neat little summaries of the achievement and the character of each.

Of kings there are 107, dating from the mythical Fergus I., anno 330 B.C., to James VI. and I. The *Heroes* date from B.C. 213, but the great majority are historic characters. The poem on Wallace is fervid enough to satisfy the present promoters of an Elderslie Memorial. One line is quotable :

> *Nil non pro patria geris, et pro te haec nihil unquam.*
>
> All that thou did'st was for thy fatherland, yet it does naught for thee.

Among other writers in this class we have Andrew Melville again, with his smoothly told myth of Gathelus and Scota. More historical are Thomas Maitland's poem on the "Surrender of Dumbarton Castle," Thomas Murray's grandiose poem on the war between Turks and Venetians, and George Thomson's "Night Attack on Geneva."

Perhaps the poems in this class that prove most interesting, are those that echo the events of the time, and may be taken as journalism. To light upon verses on the Gunpowder Plot, or the Murder of Buckingham or the Capture of Ostend, is like coming upon an old newspaper. There is an interest, too, in such poems as those of Sir Robert Ayton on Joan of Arc. It brings very forcibly home to us the change that had come over Scotsmen in their attitude to France. A Frenchman had written verses on the Maid, praising her virtues. And one clause—

> Castra virûm sed casta sequor—

stimulated Ayton to ribaldry untranslatable.

As a courtier constantly seeking the royal favour, Ayton had to offer incense not only to James but to his minions, and at the court of James the fittest incense must be in Latin; but he did not make much of it all. To a lover of Joan of Arc, there is a certain satisfaction in learning from one of the *Delitiae* that, in spite of all his Latin kow-towing he came by little profit. That, however, is not the reason why I mention it. It illustrates what I have said, that many of the poems vivify those times to us. After a passage asking why the royal hand, so generous to the undeserving, should be niggard to such deserts as his, he proceeds to emphasise his merits. Not only has he been nobly frank in word and manner, but he has sedulously studied the King's wishes and likings.

"*I* have not inhaled the fumes that India (*i.e.*, America) sends;

and that India has taught men to suck in with the throat and expel through the nose." That is, he has respected the King's dislike of smoking. Incidentally we note that the more harmful form of smoking—what we now call *inhaling*—seems to have been practised thus early.

Next, he adds, "I have slain neither buck nor doe by midnight stealth; rather I have held them sacred to thee, O Phoebus!"—Phoebus, being James. The deer are evidently to be held as sacred as the kine of Helios, in the Odyssey.

Further: "My opinion of a Puritan is no better than my regard for a Paptist. Both have their foul spots."

Topical allusions of this kind enliven the pages and give an air of reality to the sentiments though amidst much that is conventional and frequently very tedious. Nor do I doubt that a more recondite student might understand allusions I have failed to grasp and find in them sidelights on characters or customs of that day.

I make no pretence, gentlemen, to having read the total of these 43,000 lines. There is not one of the poems I have not looked into, but if any seemed to have no other attraction than mere Latinity I confess that I frequently passed on. In this way much of interest may have escaped observation, and I ought to indicate what I treated in this fashion. To men of science, if they have the leisure and the Latin, it may possibly be both amusing and interesting to dip deeper than I did into David Kynloch's two lengthy treatises on the *Propagation of the Species*, and *The Anatomy of the Body*. Some six sporadic pages out of sixty-six satisfied my own curiosity. Another section to which I did slight justice was the *Sacred Poems*. Into some I read far enough to find that they contained much noble rhetoric. Andrew Melville's *Song of Moses*, a paraphrase of second Deuteronomy, and his *Paraphrase of the third chapter of Job* seemed especially powerful; and his other sacred poems may be quite as good. But into the poems by Andrew Ramsay, a series dealing with Creation, with the Blessed State of Man before the Fall, with The Fall and its Results, and, finally, with The Redemption, I have not had the time nor, perhaps, the inclination to examine. As to Alexander Ross, the chaplain in ordinary to Charles the First, I was at first attracted to the two poems under his name. He was, as you know, the author of many and varied works, and he won the praise of Sir Thomas Urquhart. "I must," says Urquhart, "salute that most learned and worthy gentleman and most indeared minion of the muses, Master Alexander Ross, who hath written manyer books, what in prose, what in verse, than he hath lived years." Alas, I failed to get through even the two poems included here. The first is a History of the Jews from the Exodus; the second is entitled *Virgilius Evangelizans*, and is a life of Christ in close imitation of the *Aeneid.* Line upon line is almost pure Virgil.

Acta virumque cano caeli qui primus ab oris
Virginis in laetae gremium descendit, &c.

"Deeds and the man I sing, who first from the shores of heaven descended into the womb of the joyful maid."

A very curious poem, weaving Virgil and the Evangelists together with wonderful ingenuity. This is, of course, that Alexander Ross whom Butler refers to in *Hudibras.* But though we have Butler's assurance that

"There was an ancient, sage philosopher
That had read Alexander Ross over,"

I confess I got through no more than sample passages of the poems to his name in these volumes. The total number of verses in the two extracts is over 3,000.

A very different poem from any in this section is that ode on spiritual serenity, the *De Tranquillitate Animae* of Florence Wilson. It is a song of the vanity of all things earthly and of the need of a stoical endurance of passion and pain until Christ calls to another world. Christ is all in all. There is a cold austerity throughout.

"Wormwood yields no honey, thorns no grapes; and he that seeks joy of this life would gather from the tree a fruit it does not bear. Whatever loveliness your eyes behold, your hands touch—all is dust and shadow, mere dreams of this brief night."

The resultant philosophy is a mingling of stoicism and of Christian hope. There is little human kindliness or sympathy, but much scorn for the vulgar and a pride in being of the few. "For," he says, referring to the religion he preaches, "a beautiful thing will always be rare, always difficult." But, cold and unamiable though it may read in parts, it is noble, and for distinction of style stands at the head of the sacred verse in these volumes.

Before passing to the next theme, it may be worth noting a lengthy poem that belongs, at least in its pretensions, to both science and religion. I mean the *Ova Paschalia* of David Echlin. Who Echlin was I have been unable to learn, but while I studied that poem I had a great desire to know, for he must have been an odd fish. *Ova Paschalia*—Easter Eggs! I was prepared to find it a poem on the egg as the symbol of the renewal or the perpetuation of life, and therefore used at Easter to commemorate the resurrection. A few lines towards the end do try, with great perplexity, to account for the association of eggs and Easter, but the theme is of ampler scope. Its ambition resembles nothing so much as that of *Sartor Resartus.* It differs as much from ordinary talk of eggs as *Sartor* differs from a leader in the *Tailor and Cutter.* Echlin approaches his subject as Carlyle approached his, but, alas, without the gift of humour. What *Sartor Resartus* would have been without humour it is possible to realise by reading this poem. It is the most ludicrous serious poem I ever read. *Ova cano,* it begins.

"Of eggs I sing. Stand by the bard, O Mnemosyne. Grant me, Goddess, fluent power to utter, in words that shall please, my song of those smooth balls of snowy colour, of waves of liquid white and yellow yolk." Was it bathos or parody, I wondered, when I first read these august lines. I remembered the serious status of the *Delitiae* and read on, puzzled;

"In the beginning the Divine power of the Eternal Word decreed that eggs be formed in smoothly rounded shape and enclose their fluids within thin walls—decreed therefore that they should resemble the archetype, the primeval vault of heaven. And thoughtfully so decreed; for what but one vast egg is all this world!"

This suggested Swift's *Essay on a Broomstick.* "Surely mortal man is a broomstick!" I thought I had made a find. Was it an effort of ingenious wit? But no. The poem proceeds with unmistakable and increasing owlish gravity. The universe, in whole and in detail, is to be explained by analogy with the primordial egg. There is, for instance, a serious groping effort in physics, but it amounts to little more than a desperate attempt to adapt the philosophy of Anaxagoras.

After this lofty flight—very baffling to weak eyes that would follow—the bard deserts the higher regions with signs of weariness.

"Whither do thy steps lead thee, O Muse? Leave the heavens —they are too cold—and eagerly brood with me over new-laid eggs."

The new passage begins with these momentous words: *Candidus est ovis color.* "White is the colour of eggs." He then proceeds to matters of fancy. White is the king of colours. It is the sheen of Phoebus. Maidens love it, mixed with the roses of their cheeks. And so on. He even proceeds to tell of a white crow that had lately been a pet of the Queen.

The poem itself is worth a whole evening, if only to prove the desperate ingenuity of a certain class of Humanists who, like Sir John Scot, read and practised Latin chiefly for its language and its art of verse. So absolutely did they study the mere letter of Latinity that they were completely out of touch with life as lived in their own times. When they did try to be up-to-date, they immediately ran on ground that the sea of Time had already submerged.

In short, this *Ova Paschalia* of David Echlin is the final proof that *the* test of admission into the *Delitiae* was good Latinity. All kinds of thought and sentiment find entrance on that one test —Catholic and Protestant, servile Royalist and stout King-Questioner—all are there. They meet on one common ground, they pass one common test: all write good Latin. I don't mean that all use words and constructions that belong only to the Augustan period; but those who take liberties — John Barclay in particular — do so like masters and not as pupils of the language.

By this time, some of you may have come to the conclusion that whatever evidences of buried power these volumes may contain, their general appeal must be only to such as have some taste for the curiosities of literature, or to the still smaller number that would read anything, however dull, however voluminous, if only they might add but a taper's light to the illumination of the past. Is it so? If every one read Latin or if the poems had been in the vernacular, is there nothing in the work that might appeal more generally? The most favourable reply comes from that section I have called *Miscellanea.* It amounts, as I said before, to some 15,000 lines. I have winnowed it as carefully as I might but with only a very occasional find.

A very large proportion consists of epigrams, and few are of the slightest general interest—though now and again the student of history may note one or two. But what do you say to this one on a gentleman called Carnegie. It is in Vol. I. p. 622 and runs thus in the Latin—

Nec numero clauduntur opes, nec limite rura,
Carnegi, servat mens tamen alta modum.

Some may translate it thus:

In gold, in land, though rich is thy estate,
Yet is thy mind, Carnegie, moderate.

That may sound ambiguous. Perhaps it would be truer thus—

In gold, in acres, rich past computation,
Yet does thy lofty mind know moderation.

For the rest of the *Miscellanea*, much is little more than the journalism of the seventeenth century; or, as it may be better put, had the authors lived now they would have ranked among those who serve to give a literary flavour to the columns of our greater dailies. Of these the chief is the so-called editor, Arthur Johnston. Those who are accustomed to think of Johnston only as the translator of the Psalms into that Latin version which, at the suggestion of Laud, was by some proclaimed to be better than Buchanan's, may be surprised to hear of him as having the makings of a literary journalist. But it is quite clear from his *Parerga* or occasional poems, included here. Many of these are extremely racy, and are on all manner of subjects. Now he is talking politics, now slating with excess of scorn a critic of Buchanan; now he narrates his experiences of the rascal sailormen who robbed him on a voyage; now he deplores, with graphic detail, the miseries of farming life in Aberdeenshire. These and other verses he would perhaps have written in prose now-a-days for some journal. Their only flaw in the eye of an editor would have been their excess of mythological allusion; but that was characteristic of the times. I am tempted, even at this late stage, to dwell on this aspect of Johnston, as it is one to which I have seen no reference made. His *Psalms* brought him fame, but they do not reveal to us his interesting personality. They merely show the elegant expert in Latinity. These *Parerga* show us the man himself, and are therefore the truer literature. They were written, he says, "far from the sacred rock and happy waters," but that merely means that they were simple and unpretentious, and they may be all the better for that. But, for lack of time, I shall not translate any of those I have referred to, though I would especially direct the attention of the historical scholar to his letter to Robert Baron in which he describes the squalid misery of farming where "Gadie rins, at the back o' Bennachie." How, in another poem, he curses *Gadie*, that stream that a more modern song sings of with wistful affection! But I may not delay.

I cannot leave Johnston, however, without viewing him in another aspect. His epistle to David Wedderburn, the friend of his boyhood, and at the time Rector of Aberdeen Grammar School, reveals him as, apart from his version of the *Psalms*, a poet not unlike Cowper. Saint Beuve speaks of the "divine chit-chat" of Cowper, and some such quality inspires this poem. I have tried to translate it into verse, but you will easily understand that the happy naïveté of the original is lost, and make due allowance in favour of it.

Old age creeps on, dear Wedderburn. You see
Dishonouring snows thicken persistently
Over my humbled head. My frailties own
The sap of life run dry in every bone;
And brain as well as body feels the change.
The old life's gone. Even books—'tis very strange—
No longer charm. A merry tale, a jest
No more may rouse light laughter in my breast.
I'm grown morose and difficult to guide,
Ready to find some slight on every side;
And, what is worse than merely being old,
Light cares that youth would scorn lay heavy hold.

A cankered body and a cankered mind!
For these I search all pharmacy to find
Some Christian cure,—that is, no damned art
Satan or his Mephisto might impart.
'Tis useless all. Yet, if 'tis nothing more,
A salve I know—a balm: to ponder o'er
The long forgotten days when I was young.
Especially when *you* steal in among
The many pictures. Pleasant visions all!

How clearly memory can now recall
The lads we were when first our friendship grew.
Alike in years and temper, neither knew
An ardour that his comrade might not share.
An equal passion led our hearts to dare
The steep ascent to Learning's highest hill;

But—do I wrong you? with unequal will
To strive. You lagged, while I with pinions weak
Toiled upward. What the pain I had, to seek
The way myself, to point it out to you,
And keep you ardent! What did I not do
Lest you should flag, and leave me to toil on
Companionless? Alas, had you been gone,
Might not my dear ambition, too, have failed.
Wherefore I doubly strove, and while I scaled
To high Apollo, dragged you up behind.
I urged, I chid, I flattered. You may find
Our parallel in that renowned pair,
Dædalus and his son, who winged the air
Through clouds and heaven's stars in high essay.
Like Dædalus I strove to point the way—
But there the likeness ends. The noble son
Failed, and the sire prospered. You strove on,
With better fate than Icarus, and attained
Those laurels I have sought and never gained.

Here follows, in the manner of the time, a pedantic array of classical parallels, of pupils who had grown greater than their pedagogues. In his case it did not weaken friendship.

You seized the prize I vainly thought my right,
Yet never did a melancholy spite
Disturb my soul toward you. Envious hate
Parts no true friendship, when unequal fate
Makes sad distinction. Could my spirit fail
That long had fed on many a noble tale
Of old heroic friendships?

Then follows, in the old ostentatious manner, an array of classical Davids and Jonathans. Thereafter he sketches their manner of spending a day upon the Grampian heather. It is a picture of young enthusiasm, not without pathos when we think of it as written by one in whom the sap of life has run dry:

Yonder in the west
There is a hill that takes the sun to rest;
Now graced with heather only, where of yore
Its caves and cliffs with woods were shadowed o'er.
In that high air, light-hearted, many a time
We worshipped those bright deities of rhyme,
Apollo and his fair Pierian ring.
The mount as great Parnassus I would sing,
As holy Pimpla, you. How fancy shone!

We climbed a cliff—you sang of Helicon
While I looked down o'er Delphi. Rivers, too,
That ran among those hills, our fancy knew
As coiled Permessus, or his daughter stream,
Pure Aganippe, or what waters dream
And, dreaming, sing through Phōkis. Every spot
Showed Phoebus manifest. His hallowed grot
We found in every cavern; and the song
Of country toil, that seemed to chant among
The shadows everywhere, renewed the God
Whose wisdom graced Ascrēan Hesiod.

So, of the shining Heaven: 'twas our delight
To sing in classic phrase each lustre bright
Of star or sun. Ah, happy pedantry!
Did Spring set out the meadows fair to see,
Then each of us in busy rivalling
Set all his soul her thousand hues to sing.
Or birds made melody; and 'twas not long
Ere our trim Latin gave them song for song.

So sang we all things. Nothing seemed to be
Too daring for our young audacity.
We dared as we enjoyed, and every sun
Brought us a thousand pleasures, without one
That left sour after-taste. Life's joyous wine
Drank to the bottom pure, a draught divine.

Such is Johnston's picture of *joie de vivre* as youthful poet and pedant. Yet as an old man he gallantly refuses, after all, to make a poor mouth. In verses further on he bravely sings the advantages of being up in years. They are ingenious and run simply.

AGE AND YOUTH.

Whene'er of age I would complain,
And wish old summers back again,
I think of young men—and refrain.

The loss of youth is loss untold—
So say we all—yet I'll be bold
To sing the praise of growing old.

For who are chosen to debate
In Councils of the Kirk and State?
All, all are old. Young men must wait.

Old custom bids young men uprise
To honour age. *We* tyrannise,
Yet youth dare never criticise.

The trumpet sounds to meet the foe !
To save the fatherland from woe,
Old men are useless—Youth must go.

Their joy is toil and pain : *our* scars
Are painless now : no labour mars
Our easy tales of boasted wars.

When maids demand, 'tis shame to see
Young men deny them : happy we
With white heads for apology.

For wine, 'twere wise if youth rebelled
Against it ; yet, as Cato held,
Grapes have a blood for sapless eld.

The niggard hand, the unchecked tongue,
Stern brows o'er gloomy eyelids hung,
Are all disgusting in the Young.

But all unblamed, *we* prize the power
Of gold, or let our manners sour,
Or take to talking by the hour.

And so on, for a few more verses.

Johnston's contributions in themselves might well have sufficed for a night's discussion. I must leave him with these few remarks and attempts at illustration. It is time also that I had finished, but I may not close without some reference to John Barclay. He was only half Scottish, being the son of a Scotsman, Dr William Barclay, Professor of Law in the University of Angers, and a French lady. His life, as written by Irvine, is most interesting, and proves him to have been a man of extraordinary versatility. His years were spent now in London, now in Paris, now in Rome, so that it is evident, apart altogether from his Latin culture, that he could not possibly have adorned Scottish vernacular literature. But he *did* prove himself a distinguished author in Latin. Besides works on jurisprudence and theology he wrote poetry in a great variety of forms. Chief of these is his *Argenis*, a romance full of disguised political allusions. Cowper refers to it in one of his letters : "If ever you allow yourself to read for mere amusement, I can recommend it to you as the most amusing romance that ever was written. It is the only one indeed of an old date I had ever the patience to go through with. It is interesting in a high degree, richer in incident than can be imagined, full of surprises, which the reader never forestalls, and yet free from all entanglement and confusion. The style too appears to me to be such as would not dishonour Tacitus himself." In another letter he calls it the best romance that was ever written. "It was," says Irving, "a special favourite with Cardinal Richelieu, and also with Leibnitz."

We have no extracts from the poem in the *Delitiae* but I give you those comments on the quality of Barclay as likely to prove more authoritative than anything I might urge myself in discussing the numerous poems that are contained in this selection. Yet I would add a word on these.

The best of them are in the *Miscellanea.* They number twelve and amount to some 400 lines. They are chiefly poems of Nature and erotic verse. The latter are chiefly imitations of Catullus, but he has another vein, the coarsely personal in which the wit is of a broad, bucolic nature, as in our Scottish poems of *Kate Dalrymple*, *Kirsty Forsyth*, and *Marjory Millar.* You know the style :

A weegle in her walk had Kate Dalrymple,
A sneevle in her talk had Kate Dalrymple.

You would hardly know him for the same may in his poems of Nature. His love of Nature is sincere, and he has got a little of the visual gift shown by Dunbar and the Scottish vernacular poets in general. Like Dunbar he inclines to be aureate but he keeps sincere with all his stylishness. Did our literature lose nothing in the Latin silence—it is silence now, at anyrate—of one who wrote that poem to Autumn, beginning in a manner that may be thus illustrated :

Autumn, whose laden boughs hang down
Like limbs of the exhausted year.

There is more than fancy in that: there is poetic imagination. But of all the poems included here, the one that brings him nearest to us is his *Vota Modesta* or Humble Prayer. Let me attempt to render part of it. After a conventional Latin beginning, it proceeds :

This first I ask, my heart may be
Sincere in frequent piety
Before God's altar, and each prayer
Be pure from all ignoble care.

As to the next verse, you may remember that Barclay, like his father, adhered to Catholicism, and had to suffer loss thereby.

> Ne'er let me from that faith depart
> So sacred to my father's heart;
> My ancestors shall I condemn
> By slighting what was dear to them?
>
> God help me ever to refrain
> From thoughts that tire the puzzled brain
> Of sceptics. Does no thunder-roll,
> No lightning-flash, affright the soul
> Of proud oppressors of the weak?
> Such riddles trouble *them.* I seek
> Humbler things to ask of God.
>
> May He grant, with kindly nod,
> Peace beneath my roof, and bless
> My marriage-bed with fruitfulness—
> (Though, may my lady ne'er give nurse
> To more than suits my humble purse).
>
> May friendship hold, no friend of mine
> Grow traitor to the bond divine.
>
> Yet may I have my leisure free
> From frequent hospitality
> To stranger guests,—for only then
> Comes time for striving with the pen.
>
> And, since I loathe to lie, or sing
> Sweet flatt'ring praise of prince or king,
> God grant me wealth enough to be
> A poet, from such fawning free.

And so on for some verses more.

This paper, from the nature of the task, has been a sad jumble. But if, now and again, I may have proved discursive, I have sought to keep in view the thesis I proposed at the outset. It was, if you remember, to examine the volumes in order to test Professor Walker's dictum that they represent "a work of forgotten lore and buried power." There is no doubt as to the first part of the statement. There is much "forgotten lore." Much of it—the greater part—is probably not worth recalling, though to the pure antiquarian many items may afford interest and delight. Parts, however, are of genuine value to the historian. How far they may contain anything he may not know without such aid, I cannot pretend to say. I would only remark that in studying the work, the history of the period became more minutely vivid to myself, an ordinary student. As to the proofs of buried power—on that point I would be more decided. Of talent and scholarly attainment there is proof on almost every page. Proofs of genius are more rare, but they are to be found at least in the works of Thomas Maitland, Andrew Melville, Arthur Johnston and John Barclay.

English Epical Theory and the Heroic Poem. By THEODORE DOUGLAS DUNN, M.A.

[Read before the Historical and Philological Section, 11th December, 1907.]

IN the 16th century when English literary criticism first took form, the Homeric and Virgilian Epics, by the magnitude and dignity of their performance, held the mind. In the critical documents of this century we may discover an almost extravagant eulogy of the Heroic. Webbe in his "Discourse of English Poesie," refers to "that Princelie part of poetry wherein are displayed the noble acts and valiant exploits of puissant captains, expert soldiers, wise men, with the famous reports of ancient times." For Sir Philip Sidney the "heroical" is the "best and most accomplished" kind; and Sir John Harrington speaks of "Heroical Poesie that with her sweet stateliness doth erect the mind, and lift it up to the consideration of the highest matters." It was necessary to urge the moral and didactic value of the heroic as an argument against Puritanic insistence; but, combined with defensive utterance, there are several attempts to formulate some conception of the nature of the Epic. George Puttenham, in 1589, tells that "such as gave themselves to write long histories of the noble gests of kings and great princes, entermedling the dealings of the gods, half gods, or heroes of the gentiles, and the great and weighty consequences of peace and war, they called Poets heroic, whereof Homer was chief and most ancient among the Greeks, Virgil among the Latins." Webbe deplores the absence of the heroic in our literature, but holds that our ancient chroniclers come nearest to the fulfilment of Epic demand; and Francis Meres, in 1598, makes convenient application of his theories, telling us that "Spenser and Warner be our chief heroical makers." Spenser we know. Warner's achievement, in his Albion's England, was to have "penned the history of his own country from Noah to his time." Both had large aims, and were unwieldy in performance; but the Elizabethan age was nothing if not spacious. Mighty deeds generously recorded were secure in their appeal, and had no need to fear a scrupulous critical censure. A less liberal temper might have been satisfied with the immediate adaptation of classical theory; but, while contemporaries were arraigned before the bar of Greek and Roman achievement, precise interpretation of the classic literary canon was in the main left to the 17th century which became pedantic in the process. The style of the old song of Percy and Douglas contrasted poorly for Sir Philip Sidney with "the gorgeous eloquence of Pindar"; nor was there anything to compare with the works of Homer and Virgil "in respect of the glorious ornaments of gallant handling." Yet it is on record that Warner was held in repute by the best wits of both Universities as the English Homer; and his work swelled before 1612 from four to sixteen books.

In the Elizabethan conception of the Epic, precise critical theory had little place. In an admiring zest of heroical imitation the 16th century forgot to be analytic; but there grew up, along with an unexampled freedom of literary practice, a vigorous interest in literary doctrine which was powerless to check creative licence, so long as genius and inspiration moved hand in hand. But when the age fell away from its first and best impulses, poetic theory became the cult of a fastidious literary class. A new note in criticism was struck by Sir John Harrington in the preface to his translation of *Orlando Furioso*, where he defends Ariosto by careful reference to the rules of Aristotle; and we are left to conjecture the nature of that Epic which, according to Drummond of Hawthornden, Ben Jonson had in mind to undertake, "intitled Hero-ologia, of the worthies of this country roused by Fame." Jonson was master of the new learning, and held stoutly that "for an heroic poem there was no such ground as King Arthur's fiction." The possession of such a performance, the work of a classic theorist enthralled by Arthurian romance, is denied us. But the date of his recorded intention is a convenient starting point for the investigation of what belongs peculiarly to the 17th and 18th centuries.

The epical conceptions of the 16th century did not receive adequate embodiment. The prose histories of Hakluyt, the loosely rhymed chronicles of Warner and Drayton, and the lofty, allegoric verse of Spenser were splendidly inadequate. Succeeding epochs had neither strength nor inspiration to carry the dreams of a titanic age to fulfilment; and the patriotic and heroical ideas that jostle one another on almost every page of late 16th century criticism disappear with the fervour that produced them. A medley of motives confused artistic aim in the period that intervenes between Shakespeare and Dryden. Waller's declaration that

> Poets that lasting marble seek
> Must carve in Latin or in Greek

is emphasied in the lament of Hobbes that *Gondibert* was written in perishable English when the ancient tongues had "put off flesh and blood." In spite of extreme admiration for the classics, the charm of the Middle Age lingered. Milton was attracted by what Chaucer himself had touched upon:

> The story of Cambuscan bold
> . . . . . .
> And of the wondrous horse of brass
> On which the Tartar king did ride.

But the earlier poems of Milton are the college exercises of genius; and the poetic and critical performances of the mid 17th century are akin to the private publications of a select literary society. Amongst such must be included the unfinished *Gondibert* of Sir William Davenant which was published with its elaborate preface in 1650. With this work the English Heroic Poem may be said to begin; and from this year may be dated that strange impulse to Epical experiment which is the subject of this essay. Davenant's preface, the butt of certain contemporary wits, was an elegant dissertation addressed to the philosopher Hobbes. It called forth a studied answer. Both documents were written in France, and have given weight to the theory that England, in the early 17th century, was heavily indebted to French literature. But, while Davenant was in line with contemporary French effort in choosing to write an Heroic Poem, and following a prevailing fashion in addressing a distinguished friend, he was genuinely English in his outlook; and his preface has at least the single merit of illustrating a development in English literary criticism upon lines well defined as English. Here, for the first time in our history, do we find a reasoned statement of Epical theory.

In his summary of the Heroic poets, Davenant includes Spenser, and makes notable reference to Homer, whom he considers as "one who hath rather proved a guide for those whose satisfied wit will not venture beyond the track of others, than to them, who affect a new and remote way of thinking; who esteem it a deficiency and meaness of mind to stay and depend upon the authority of example." If it be true that the age of English classicism ever bowed in foolish worship of the Ancients, Davenant was not the first idolater; and the censure passed upon him by Richard Hurd may not unjustly be reconsidered. The same independence of judgment prompts the choice of period for his theme; and he makes it clear that he will seek a former age sufficiently remote to preserve him from "their improper examinations who know not the requisites of a poem; nor how much pleasure they lose who take away the liberty of a poet, and fetter his feet in the shackles of an historian." It is clear that the author of *Gondibert* was no slave to imitation, and that he is not responsible for that laboured complexity of theory which Swift was compelled to ridicule.

The continuation of the preface to Gondibert is of peculiar interest in so far as it connects drama and epic in their formal aspects, and contains Davenant's declaration to construct his heroic poem on the model of the English play. Having gathered the material of his fabric, he calls special attention to the form, and continues thus: "I cannot discern by any help from reading or learned men, that any nation hath in representment of great actions digested story into so pleasant and instructive a method as the English by their drama; and by that regular species I have drawn the body of an heroic poem." Then follows a discriminating analysis of English dramatic form, with the decision that the Heroic Poem may be divided into five books, a conclusion approved by Hobbes, who, in his reply to Davenant's address, maintains that the heroic poem narrative is epic and the heroic poem dramatic is tragedy, declaring that "the figure of an epic poem and of a tragedy ought to be the same, for they differ no more but in that they are pronounced by one or many persons." By "figure" we are to understand five books divided into songs or cantos "as five acts divided into scenes has ever been the approved figure of a tragedy." This constructive method was left to Pope to exemplify in his burlesque *Rape of the Lock.* Davenant's own performance broke down with the third book; but his preface is in no sense defective. The remaining points of interest are a confession of much labouring of his material, an apt definition of wit, a series of apologies for poetry, reminding us that the Restoration had yet to come, and the following declaration of originality in method which re-echoes the preliminary remarks upon Homer: "If I be accused of innovation, or to have transgressed against the method of the ancients, I shall think myself secure in believing that a poet who hath wrought with his own instruments at a new design, is no more answerable for disobedience to predecessors than law-makers are liable for those old laws which themselves have repealed." We may conclude that the author of *Gondibert* was prepared to meet the literary demands of his own age, and to modify his material and his method in accordance with what he himself considered true and adequate standards.

The audience awaiting Davenant had been educated romantically through Spenser, and formally through the stage. The preface to Gondibert was not concerned with the adaptation of foreign material to English uses, but with the manipulation of literary substance in accordance with certain formal laws already familiar. These laws were dramatic. In the theatre the Elizabethan heroic spirit had found literary expression; and only in the drama did the literature of our greatest period approximate to finished artistic beauty. The drama offered a scheme with definite and formal limitations; and Davenant, himself a playwright, would have imposed this scheme upon the heroic poem. He anticipated the methods of Richardson, who recognised the great interest in the dramatic literature of the 18th century, apart from actual stage representation, and, in his choice of method, compromised between the play and the prose narrative.

As a theorist Davenant displays ingenuity and knowledge of contemporary literary conditions; but his *Gondibert*, for all the skill of its preface, is a dismal failure. It breaks off at the end of the third book, and is written in a four-lined stanza of intolerable monotony. The story is of one Aribert, King of the Lombards, an accomplished soldier, whose daughter Rhodalind is of that surpassing type of beauty which baffles description; and the poet slips from his obvious task of delineation by saying that

. . . . . her beauty's just renown
I wave for public peace.

"Oswald the great and greater Gondibert" are of the royal line of the Lombards. The latter is desired by the King to become his son-in-law, but the former seeks the hand of Rhodalind as a reward for military service, and is inclined to the royal power, pressing his suit through Gartha, his sister. While Gondibert is hunting with his friends, who are suitably chosen in pairs to fill up the gaps in the love interest, Hurgonil and Orna, Arnold and Laura, Oswald with his friends, Paradine, Dargonet, Hubert, Borgio, and Vasco, comes down upon him at the end of the second canto, which ends on this heroic note sounded by Hurgonil:

Victors through number never gained applause;
If they exceed our compt in arms and men,
It is not just to think that odds, because
One lover equals any other ten.

Champions are picked and Oswald is slain. Gondibert, severely wounded, is lodged in the house of the famous physician, Astragon, where he is attended by Birtha, the latter's daughter, with whom he falls in love. Gondibert dallies with Birtha, and tries to marry her before the King may interfere; but Orgo is despatched from the court with news that Aribert has proclaimed Gondibert his heir and chosen son-in-law. A royal train arrives with the King, who offers Rhodalind to Gondibert in a suitable speech. The latter, by his refusal of this honour, displays an attractive humility, and the King orders him to Court. Birtha consents to separation and is given a gem by which she may test the fidelity of her lover who now sinks into insignificance between the rival affections of the erotic ladies, Rhodalind and Birtha, who carry on what Astragon describes as "an unrighteous war of prayer" for success in love. The poem ends abruptly on a ludicrously unheroic episode in which an attractive black lady of a certain Italian town has the chief place. The work lags through its unending cantos. There are continuous pauses, moralising and didactic, between the main points of the narrative, if these really exist; and the subsidiary characters are badly managed. In spite of the scheme set forth in the preface, the poem is in no sense formally dramatic.

Through this single performance, Davenant enjoyed great contemporary repute. The Malone collection has a small volume containing two sets of verses, one satiric and tilting at the preface, the other commendatory and with the well-known lines:

> The ladies lay the book before um
> And Polexander's not o' the Quorum,
>
> . . . .
>
> They're catechised in Gondibert.

John Aubrey in his Brief Lives tells of Archbishop Usher, who, when he was asked by Sir John Denham if he had seen Davenant's work, replied: "Out upon him with his vaunting preface, he speaks against my old friend, Edmund Spenser." An indictment altogether unfair, and disproved by Edward Howard who, in the preface to his heroic poem, *The British Princes*, of 1669, places Spenser and Davenant side by side as the first exponents of English Epic, and finds in *Gondibert* "many remote and excellent thoughts with apt and perspicuous expressions." The *Athenian Oracle*, of 1704, recommends *Gondibert* for poetical reading, a work which, according to Cibber's *Lives*, had been a subject of controversy for almost one hundred years owing to its being unfinished.

Davenant's contribution to the literature of his day lies neither in the intrinsic value of his poem nor in the analytic ingenuity of its preface. In his choice of subject he set the fashion of a tale at least in line with historical and natural probability. This was realised by Cowley when he penned his prefatory lines:

> Methinks heroic poesie till now
> Like some fantastic Fairyland did show;
> Gods, Devils, Nymphs, Witches and Giants race,
> And all but man in man's best work had place.

His diction aimed at freedom from affectation of every sort. Waller referred to his "pure, fresh language." In his use of the quatrain he confirmed the general conviction that the decasyllabic measure is the best for heroic poetry: a conviction amusingly remarked by Hobbes who declared that the decasyllabic line corresponded to the hexameter: "a longer," he says, "is not far from ill prose, and a shorter is a kind of whisking like the unlacing rather than the singing of a Muse." His work reacted upon the stage, and Dryden was quick to recognise his debt in the matter of the *Heroic Play* which he defines as "an imitation in little of an heroic poem"; while, mindful of *The Siege of Rhodes*, he tells of the excellent groundwork laid by Davenant, and maintains that "we are all bound with all veneration to his memory." It is evident that at this period there was much searching after literary method. Laws had been evolved but not imposed. Dryden had used just so much of Davenant's theory as was likely to be of value; but when a poet appeared bound upon a truly epical adventure, shackles forged by a critical artificer, however cunning, were so many impedimenta to be rejected. John Milton had his own method and his own manner. Davenant's preface was destined to become an interesting antiquarian document; and the reason lies in the vital force of Milton's achievement; in the varied interest of Dryden's performances; and in the medley of epical theory which connects itself in the second half of the 17th century with many distinguished names, French and English. Innumerable discussions upon the laws governing heroic poetry cover the latter portion of Dryden's period, until the genius of Milton comes by its own and broods over the entire 18th century.

In his essays on Chivalry and Romance, Richard Hurd attempts to discover the sources of 17th century criticism, and maintains that Davenant's preface introduced the doctrines of French critics into England; and this, he declares, contains the substance of whatever has been written since on the subject. "Succeeding wits and critics did no more than echo their language. It grew into a sort of cant with which Rymer and the rest of that school filled their clumsy essays and rambling prefaces." This statement may be accepted only in its general indictment of what was a spiritless and mechanical process, the reiteration and adaptation of critical formulæ, especially after Milton, using just so much literary doctrine as served his purpose, had given final justification to the true classic creed. After the Restoration there is frequent reference to contemporary French criticism. Dryden extols Le Bossu whose definition of Epic Dennis borrows entire in his attack of 1696 upon Blackmore. Rymer translated Rapin who is recommended as a guide in the preface to *Prince Arthur*. But, while Davenant's debt to French literature is in no way clear, it would appear that England and France were busy at the same time with the same doctrinal experiments. And the abuse of it all lay in an almost superstitious belief in the possibilities of lucid critical statement, if followed out, to produce great poetry. It is not true in literature, as Scudéry imagined, that if an architect takes his measure right, he is assured of the beauty of his building; and a fundamental misapprehension of poetic truth is revealed in Gildon's lines on Le Bossu:

> But he disclosing sacred mysteries
> Has shewn where all the mighty magic lies.

The elixir of poetic life was not to be extracted by any alchemy of analysis, and the delicate spirit of poetry was not destined for servile captivity to the demands of an uninspired industry. This industry was directed chiefly to the actualisation of certain theories superimposed upon the dicta of Aristotle; and through these theories we may distinguish certain main lines of argument. The moral and didactic purpose of Heroic poetry is constantly insisted: "Designed to form the mind to heroic virtue," says Dryden, in his discourse on Epic poetry. Blackmore upholds the moral purpose of all poetry, and professes that *Prince Arthur* was written partly with the intention of rescuing the muses from the degradation into which they had fallen; and Le Bossu's dictum was emphasised by Dennis that "an Epic poem was a discourse invented with art, to form the manners by instruction." Closely connected with the idea of a moral purpose was the question of employing pagan myths as decorous Epic machinery. The "machinery," according to Pope, was a term invented by the critics to signify that part which Deities, Angels, or Demons were made to act in a poem; and in the manipulation of these beings, Dryden was prepared to be guided by the Scriptural narrative. To Blackmore the Pagan scheme of Theology was "monstrous and abominable"; but Edward Howard, whose *British Princes* appeared in 1669, frankly rejected Christian dogma. "I have rather taken," he says, "for my British Heroes a religion from the results of nature, as more proper to poesie and which in point of morality, might not be ungrateful to the reader of whatever persuasion." Pope had the excuse of the mock-heroic for his charming manipulation of the Rosicrucian Philosophy, where the light militia of the lower sky is scarce ever out of place; but even this was attacked by Dennis in his remarks on the *Rape of the Lock*, where he maintained that machines must be taken from the religion of one's country, and be allegorical in their application. On such details the late 17th century wasted much critical energy. It is significant that the greatest poets of the time were the most reserved in theoretic utterance; and in the attempts to frame an inclusive definition of the Epic or Heroic poem, Dryden was outstanding in brief simplicity. To him Davenant's work appeared as rather a play in narration than an Heroic poem; and in his discourse on Epic poetry he maintained that "Tragedy is the miniature of human life, an Epic poem is the draught at length." Milton's view may have found publication through Edward Phillips who, in his *Theatrum Poetarum*, holds to the opinion that Heroic poetry is simply the highest degree of Epic which is of the "largest extent, and includes all that is narrative either of things or persons." It would be easy to multiply definitions that are far removed from the simplicity of this statement. The humour of the whole process of Epic theorising was not lost upon the acute; and burlesque definitions of the Heroic may be found in Swift and Sterne. A profusion of critical prefaces, conjuring with vague terminology, may exist only in some arid atmosphere where the imagination withers; and in truth, on the Epic production of the latter part of the 17th century there had come a strange blight, first indicated by the abrupt ending of *Gondibert* with the third book. Howard's *British Princes* never passed the second; and that anonymous "Person of Quality," who endeavoured in 1686 to render Spenser "what he ought to have been" by turning into heroic couplets part of the *Faerie Queen*, never ended his task. The *Carolies* of Ogilby, an Epic of twelve books in honour of Charles the First, was lost in the great fire; and his *Ephesian Matron* and *Roman Slave* were never published. Aaron Hill's *Gideon* of 1716, lived through two books, and as "Gideon or the Patriot" was partly revived thirty-three years later. The ambitious Epical conceptions of Dryden and Pope were never put into lasting form. Looking back upon the earlier portion of the 17th century, it should be remembered that Shakerly Marmion has given the name of Epic to the story of Cupid and Psyche, related with no distinct design; and Chamberlayne's labyrinthine *Pharonnida*, "A Heroic Poem," has more beauty than plan. But neither of these authors could share in post-Restoration theory, and their work is blessedly relieved from all that gives unique distinction to such lucubrations as those of Blackmore.

The leaders of English classicism failed to justify the critical theories which lay to their hand. In his preface to *Juvenal*, Dryden maintains that our only heroic poets are Spenser and Milton, and admits that his great desire had been a single work in the completion of which his life might have been spent. This for the honour of his native country—"King Arthur conquering the Saxons, or Edward the Black Prince subduing Spain for Pedro the Cruel." The Virgilian model was in his mind; for he, like the great Roman, had intended to represent his living friends and patrons. Pope's precocious attempts at the Heroic are of less interest. "I wrote things," he said to Spence, "I'm ashamed to say how soon. Part of an Epic poem when about twelve. Deucalion was the hero of it." And again: "The Epic poem which I began a little after I was twelve was *Alcander*, *Prince of Rhodes*. I wrote four books toward it of about a thousand verses each, and had the copy by me until I burnt it by the advice of the Bishop of Rochester." He confessed also that into this he had flung all his learning, and had tried to imitate the style of all the great Epic writers. Towards the close of his life the idea of a Heroic Poem was again uppermost. The hero was to have been Brutus, and the scene England, the subject turning wholly on civil and ecclesiastical government. It was upon this intended work that Warton commented in his famous "Essay on the Genius and Writings of Pope," declaring that it would have more resembled the Henriade than the Iliad, for so didactic a genius would have been deficient in "that sublime and pathetic which are the main nerves of the epopea." It would be more difficult to dogmatise upon the probable result of Dryden's effort. Pope seemed confident of success, and it is improbable that he had ever been so struck with wonder of the Paradise Lost as to realise the incapacity of his favourite metre to embody and sustain grand effects.

But there remains to chronicle the work of one who never failed in mere performance. Sir Richard Blackmore closes the poetic history of the 17th century in a veritable frenzy of industry. The list of his works, given in "Cibber's Lives," includes as Epic or

Heroic, *Prince Arthur* (1695) in ten books, *King Arthur* (1697) in twelve books, *Eliza* (1705) in ten books, *King Alfred* (1723) in twelve books, and as "divine poems" *Creation* and the *Redeemer*. Of the Epics Johnson has epitomised the history: "The first had such reputation and popularity as enraged the critics; the second was at least known enough to be ridiculed; the two last had neither friends nor enemies." No one need dispute the truth of this judgment, for Blackmore is perhaps a worse poet than was Thomas Rymer, his contemporary, a critic; but he gave his century an Arthurian work, solved to his own satisfaction the problem of Epic performance, and earned the tempered eulogy of Addison, and the unsparing ridicule of Swift. He may have believed that Dryden's mantle had fallen upon him; and in his preface to *Alfred* he refers to the laureate's intention of writing an Epic poem. If there be interest in his work, it is found in tracing the various methods by which he illustrates one of his theories—that on the manipulation of Christian Theology in the machinery of the Heroic Poem. As we have already seen, he considered the Pagan scheme of Theology monstrous and abominable; and so we find Lucifer raising a storm by help of the Demons of the air, and driving Alfred on the African shores. The latter is warned by an angel at Centoripe to fly from an earthquake designed by Satan; and after the honour of angelic escort, he watches the doom of the inhabitants in security from the hills. In his "Advice to the Poets" Blackmore has versified his theories on Pagan machinery:

> In your machines you will no gods employ
> Who by the poet listed, fought at Troy.
> The Pagan gods might grace a Pagan scheme,
> But will they too adorn a Christian theme?
> . . . .
> Yet should you these employ to grace your plan,
> You may the Indian please or Mussulman,
> The Christian who reflects you never can.

And so the poet represents Queen Elizabeth, while at prayer, visited by Gabriel, who, in transporting her temporarily to the regions of the blest, speaks thus:

> Fear not, in safety this celestial car
> Shall through the etherial void Eliza bear.

And, in the same poem, the Devil is represented directing his myrmidons to shelter the navy of Spain against the power of Britain:

> Industrious spirits fly,
> Make haste to darken all th' inferior sky,
> Afford your aid to cloak the offensive light,
> Spread o'er the Spanish navy welcome night,
> And save our faithful friends from ignominious flight.

It was Swift who sneeringly codified a critical law which contemporary Epic poets certainly observed that "when you cannot extricate your hero by any human means, or yourself by your own wit, seek relief from heaven and the gods will do your business very readily." But this continual reliance upon celestial intervention was strangely barren of inspiration. There is nothing in English literature more ludicrously artificial than the machinery of any one of Blackmore's Epics, where, in a false and servile imitation of antiquity, the beings of the Christian belief are made to eke out the meagre details of a spiritless narration.

What is there of definite narrative power to sustain such elaborate burdens of invention as these 17th century epics seem to bear? Design, with certainty of movement, is essential to lengthy narrative. If the tale claim Epic dignity, then a style adequate to the demands of the subject is requisite. In both respects the 17th century, if Milton alone be excepted, comes lamentably short. *Prince Arthur*, of all Blackmore's works the most imitative of the Virgilian manner, is built with no serious attention to design, and fails miserably as a connected story. The strictures of Dennis in his "remarks on a book entitled *Prince Arthur*" were certainly merited. Here are the bare facts of the story which Blackmore has expanded through thousands of lines into ten books. In the first book Prince Arthur is wrecked on the Armoric coast and meets King Hoel who, after a theologic discourse involving the whole range of Scripture history and extending over the second and third books, becomes a convert to the Christian faith. After an epitome of British history, in the fifth book comes a sea-fight between Celt and Saxon, and for Prince Arthur a vision of English history down to William and Mary. Descriptions of Celtic chiefs, a pestilence and a battle occupy books six, seven, and eight; the ninth is given up to the description of games of rejoicing for victory, until the Saxons, having picked a champion, Tollo, the tenth book closes with a single combat and with Tollo's defeat and death at the hands of Prince Arthur. On this flimsy scheme are reared colossal descriptions of celestial agency, Heaven for the Celt, Hell for the Saxon, and the narrative is paralysed with awe of supernatural activity. *Prince Arthur* may be taken as the off-spring of an emasculate poetic theory which, unable to compel fulfilment of the elementary demands of narrative, was not likely to encourage vigour or beauty of language. Blackmore has no more control of large utterance than he has the power of construction. He slips continually from the simple to the absurd. Alfred who has landed with his followers on the African shores, is confronted by a wild beast, and the poet writes:

They saw a grisly panther on his way
Advance to seize them and assure his prey.
He roared aloud, oft licked his rav'ning jaws,
And struck out oft his fierce destructive paws.

In descriptions of combat he most nearly approaches the genuinely burlesque. This from the fourth book of Eliza:

The sword descended with a transverse blow,
And split his fore and hinder head in two:
It cut the wide canal along the brain,
Which here performs the duty of a vein:
A spacious road contriv'd with wondrous art,
By which the refluent blood regains the heart.
The warrior fell and poured along the plain
A bloody torrent intermixt with brain.

The unconscious introduction of a ludicrous idea reduces the whole effect of certain passages to an extreme of bathos. This from the seventh book of *Prince Arthur*:

At a small village, now unknown by name,
There dwelt a sorcerer of wondrous fame—
The Pagan Briton, Merlin, that of late
For his dire art, driven from the British state,
Did with the pagan Saxons safely dwell,
And kept his correspondence up with Hell.

It is on record that Pope in his unpublished juvenile Epic *Alcander*, wrote the following lines in reference to a hunted stag which

Hears his own feet and thinks they sound like more,
And fears the hind feet will o'ertake the fore.

But this was the precocious effort of a child who burned his lucubrations in disgust. Blackmore, doomed to the full weight of contemporary censure, had no plea in juvenility. He furnished the specimen quotations for Swift's *Art of Sinking in Poetry*; and the "Commendatory Verses on the author of the *Two Arthurs* by some of his particular friends" in 1700 are so obviously vindictive that their answer is qualified by the term "Discommendatory." The writer of *A Panegyrick Epistle to Sir Richard Blackmore* goes straight to the point in lines that realise the absurdity of the mere volume of his work:

> Virgil with all his boasted art and wit,
> Could only one Heroic Poem write.
> . . . .
> Thy more auspicious and redundant Muse
> Can every year whole reams of verse produce.

Pope has "everlasting Blackmore" with his "endless line" continually in the *Dunciad*; and the Owl that typifies dullness in the frontispiece of his satire, is seated on a pedestal whose base is a Blackmore Folio. It may have been a sincere endeavour to justify his critical theories that set the author of *Prince Arthur* to his desk; and through much and long suffering he came to a partial knowledge of the truth. Stung by the malice of contemporary attacks he declares in the preface to his last Epic, *Alfred*, that it is "a presumptuous and unpardonable arrogance to cry up the infallibility of ancient poets before the laws and rules that constitute Epic poetry, such as reason will stand by and are founded upon good sense and the nature of things, have been laid down." Would that he had discovered this truth earlier! He might have learned of Edward Phillips who was wise enough to qualify his critical theories with the statement that "Wit, ingenuity and learning in verse are one thing, true native poetry is another." It was some such conception that was destined to illumine later critical utterance. There is a large sanity in Warton, Young, Hurd, Gray and Johnson. Nor was there complete absence of clear vision in the period under our notice, for Dryden's generous references to Milton and Shakespeare may be taken as the heralds of the newer and higher criticism.

After the Restoration English criticism seemed bent on the discovery of some royal road to Epic honour. Genius alone was able to win to a solitary triumph; and in admiration of Milton's achievement the 18th century forgot to progress. Here, also, may lie one explanation of the failure of the later seventeenth; for it is no uncommon error to maintain that Addison was the first to introduce Milton to his English audience. It would be more natural to assume that the Spectator was compelled to appreciate a popular poet than to eulogise one who was of no repute. Edward Phillips speaks of Milton as the "exactest of Heroic poets either of the Ancients or Moderns," and maintains this to be the opinion of many learned and judicious persons. Over against the praise of the nephew, we may set the statements of Winstanley who, in his *Lives of the most famous English Poets*, declares that "Milton's fame is gone out like a candle in a snuff, and his memory will always stink which might have ever lived in honourable repute, had not he been a notorious traytor, and most impiously and villanously bely'd that blessed martyr, King Charles the First." These words, written ten years after Milton's death, amount to a declaration that he was an excellent poet, but no royalist. Did not Milton's best critic take the same view, when he spoke of him as having the manners of a surly and acrimonious republican? Dryden, in his preface to the translation of the Æneid, rejects the claims of the French Heroic Poets, Le Moine, Scudéry, and Chapelain; but along with Homer, Virgil and Tasso, he admits Spenser and Milton, referring to the last as one "whom we all admire with so much justice," and to the *Paradise Lost* as "undoubtedly one of the greatest, most noble, and most sublime poems which either this age or nation has produced." Bysshe's *Art of English Poetry* classes Milton with the immortal Shakespeare; and the *Cyder* of John Philips, the first of the Miltonic imitations, published in 1709, called forth a strange protest before the Spectator essays existed: "Milton's sublimity asserted: . . . . in blank verse by Philo-Milton"—so runs the title of a work whose preface declares that Philips had fallen far short both of the diction and harmony of *Paradise Lost.* Gildon, in his *Complete Art of Poetry*, is not stinted in praise; and in his volume of critical notes upon the verse-essays of Buckingham, Roscommon, and Lansdowne, he refers to the "immortal Milton who, without the help of encouragement from the State, equalled the greatest poets of antiquity." The *British Apollo*, a purely popular work, declared Milton to be "the fullest and loftiest poet we ever had," and in a list of "incomparable" pieces which follow is included *Lycidas*. Last and most remarkable, Voltaire, in his essay written in English "Upon the Epic Poetry of the European Nations from Homer," maintains that Milton was the last in Europe who wrote an Epic poem, and that in his work he finds "that uniformity which satisfies the mind, and that variety which pleases the imagination." Chapelain and Le Moine, his countrymen, he dismisses contemptuously as the "most impertinent poets who ever scribbled."

Milton's influence and reputation developed steadily from the appearance of *Paradise Lost*. Blackmore, who may have looked askance upon achievement that lay far beyond the conventional, served the useful purpose of warning the 18th century from the impertinence of Epical effort at a time when the fact of Milton's genius was for ever beyond dispute. In admiration of this genius the poetry of the 18th century became imitative in three ways that led far from the goal of Epic attainment: (1) in lengthy burlesque poems in blank verse of which the *Cyder* and *Splendid Shilling* of John Philips are amongst the first; (2) in close imitation of the twilight atmosphere and melancholic tone of *Il Penseroso* exemplified in the work of Joseph and Thomas Warton; (3) in the remoulding of the heroic couplet to suit the popular taste for the verse of *Paradise Lost* with its shadowy suggestion and vague outline. The work of Philips inveighed against by the unknown Philo-Milton, set the blank-verse fashion for a least a hundred years, the description of tobacco as

> The Indian weed, unknown to ancient times,
> Nature's choice gift, whose acrimonious fume
> Extracts superfluous juices, and refines
> The blood distempered from its noxious salts,

might be paralleled time and again in the verse of the 18th century. Cowper's "terraqueous swamps," his "stercoracious heaps" and "agglomerated piles" derive from the same Miltonic source; and the years that lie between *Cyder* and the *Task* were so fruitful of burlesque imitation that Johnson spoke out against it in his *Life of Philips*. The warning came too late. Somerville, Armstrong, Dyer, and Grainger had small fortune in the track of Philips; and Miltonic imitation dwarfed the originality of Thomson, Blair Glover, Shenstone, Young, Akenside, and Warton. The last name suggests the numberless verses that try to reproduce the tone of the *Il Penseroso*. A typical title is *The Pleasures of Melancholy*, where such lines as these betray their origin :

> The taper'd choir at the late hour of pray'r,
> Oft let me tread, while to th' according voice,
> The many sounding organ peals on high,
> Its clear slow-dittied chaunt, or varied hymn,
> Till all my soul is bathed in ecstasies
> And lapp'd in Paradise.

It is on the Poetic Diction of the 18th century that *Paradise Lost* has left its most enduring mark ; and the effect of the Miltonic style upon literary theory and practice is clearly illustrated in Addison's *Spectator* essays. From constant and appreciative reading of *Paradise Lost*, Addison was driven to the unsafe declaration that a poet must avoid the phraseology of ordinary life : "Since it often happens that the most obvious phrases and those which are used in ordinary conversation, become too familiar to the ear and contract a kind of meanness by passing through the mouths of the vulgar ; a poet should take particular care to guard himself against idiomatic ways of speaking." And in reference to Milton he continues thus : "By the choice of the noblest words and phrases which our tongue would afford him, he has carried our language to a greater height than any of the English poets have ever done before or after him, and made the sublimity of his style equal to that of his sentiments." Once more upon an age already weighed down by critical theory and precept, there was imposed an injunction as misleading as it is false. "Be sublime," at least in manner, cried the Spectator, and the century responded vigorously to the call. The result was the evolution of a style whose triumph is in the way of the mock-heroic ; for the generation that succeeded Addison strove to fill in the vasty Miltonic epithet with thought that scarcely ever rises above the commonplace. It is interesting to note that Blair, in his dissertation upon Ossian, maintained that "A sublime writer rests on the majesty of his sentiments ; not on the pomp of his expressions. The main secret of being sublime, is to say great things in few, and in plain words : for every superfluous decoration degrades a sublime idea." A declaration scarce needed in the late 17th century which was often happy in the barest simplicity.

When Garth writes thus:

> Dissensions like small streams are first begun;
> Scarce seen they rise, but gather as they run.

he does not anticipate the change of manner which is apparent in such lines as these from Blackmore:

> Celestial sweetness, mild and god-like grace,
> Ineffable, sat on his blooming face.

Here the difference of style is due mainly to the use of the Miltonic epithet which became dulled through perpetual employment, and useless for the severe purposes of the Epic and the Heroic.

By way of Miltonic imitation Epic attainment was not possible; and the rapidly growing interest in the works of Spenser and Shakespeare removed still farther the possibility of producing Heroic poetry. Spenser was almost as popular a model as Milton; and the charm of his involved stanza lived past the period of decadent classicism and attracted the genius of Byron, Shelley and Keats. But the Spenserian imitations are but elegant efforts to please a cultivated reading community; they have no pretence to Epic dignity of form or of subject. Along with the imitations of Milton's manner, they are the best proofs of the century's incapacity to create poetically. The Epic was for the 16th and 17th centuries not only the greatest poetic kind, but the greatest of human achievements; and at no period of our literature was Epic inspiration or attainment less likely than in the thirty years immediately preceding Johnson's *Lives of the Poets.* Gray and Collins were neglected singers; and Beattie, when he began the *Minstrel,* declared that he would write no more poetry until he saw the dawn of a poetical taste, no signs of which were then apparent. An atmosphere of indifference is never congenial to poetry; and the 18th century's lack of poetic effort and appreciation may be traced to the popularity of the novel, to the vogue of the theatre, and to the attractions of political and of social life. The proof of this is clear in the letters of Gray and Walpole. But the 18th century, barren of the Epic, produced many detached statements of Epical theory. Of the work of Spenser, Shakespeare and Milton, there was no lack of appreciative criticism. The solution of established critical convention had been accomplished; and Epical theory widened until it included the Ossian of James

MacPherson. In various documents of the period there are many statements that contrast sharply with the highly wrought artifice of 17th century criticism. The names of Warton, Young, Hurd, Kames, Blair and Hayley may be noted; and their own words are the best commentary upon their theories. In his Observations on the Faerie Queen, Warton declares that "it is absurd to think of judging either Ariosto or Spenser by precepts which they did not attend to;" and maintains that "if the Faery Queen be destitute of that arrangement and economy which Epic severity requires, yet we scarcely regret the loss of these, while their place is so amply supplied by something which more powerfully attracts us; something which engages the affections, the feelings of the heart, rather than the cold approbation of the head." Young, in his *Conjectures on Original Composition*, is no less outspoken: "He that imitates the divine Iliad does not imitate Homer; but he who takes the same method which Homer took for arriving at a capacity of accomplishing a work so great. Tread in his steps to the sole fountain of immortality; drink where he drank, at the true Helicon, that is, at the breast of nature. . . . The less we copy the renowned ancients we shall resemble them the more." Hurd in his essays on Chivalry and Romance rejects Aristotelian authority as applicable to Spenser, and points out the obvious connection of the Faerie Queen with Gothic rather than with classic art. Blair in his dissertation upon Ossian is the last writer of his century to discuss seriously or minutely the laboured details of Epical theory; and he applies these with great ingenuity to the justification of MacPherson's work. He maintains that "to refuse the title of an Epic poem to Fingal, because it is not, in every little particular, exactly conformable to the practice of Homer and Virgil, were the mere squeamishness and pedantry of criticism." And with uncomplimentary reference to Le Bossu, he continues that "if a general moral be still insisted on, Fingal obviously furnishes one"; and that "not only is unity of subject maintained but that of time and place also." In the matter of Epical machinery which Lord Kames, in his "Elements of Criticism" would admit only into burlesque, Blair declares that Ossian follows Homer, utilising the "tales of his country full of ghosts and spirits." But he does not fail to add that Ossian's mythology is that of human nature; and finally maintains that the question is not whether a few improprieties may be pointed out in his works but "has he the spirit, the fire, the inspiration of a poet? Does he utter the voice of nature?" Our last name, that of Hayley, the Eartham recluse, has pathetic associations. He was, at least twice, the kindly host of William Cowper, and was one of the very few men of letters who held correspondence with him. Born to affluence, he was at no time more than a dilletante; but his numerous verse productions throw occasional light upon eighteenth century points of view. In his essay on Epic Poetry he calls on Gray's friend, Mason, to rouse to the task of Epic work in honour of his country's history. Here he sums the Epic writers of England, and somewhat easily includes Chaucer, Spenser, Cowley, Butler, Milton, Dryden, Davenant, Blackmore, Garth and Pope. He continues to discuss the question of Epic machinery, and argues that if the Tragic Muse has banished Ghosts, there is no reason why the Heroic Muse, "in earthly virtue strong," should not banish angels. He ingeniously suggests the possibility of finding ample scope for Epic endeavour in the rich mythologies of India; and, in reference to the strife of rhyme and blank verse, declares, and for him boldly, that

> Poetic bigots, thus perversely wrong,
> Think modes of verse comprise the soul of song.

After once more calling for a British Epic poet, he concludes wisely that he does not intend

> To write receipts how poems may be made.

We may accept his declaration thankfully. For, had the 17th century realised that poetry was not a thing of "receipts," much trouble might have been spared. Davenant's theory, faithfully laid down, was powerless to give life to his *Gondibert.* Dryden refused to attempt Epic performance. His wisdom had convinced him of the finality of Milton's work. The late 17th century theorists produced Blackmore; and imitation of the great style of *Paradise Lost* robbed the 18th century of the power of creation. But, before the time of Addison, the relaxation of critical rigidity had begun; and we may deduce from these detached utterances of the 18th century that, had an Epic poet appeared, he had no need to fear pedantic censure. Poetry, it is now realised, is its own lawgiver. If Hayley had written receipts how poems may be made, the early 19th century would have refused to follow them.

What there is of Epic grandeur in Scott, and of Heroical enthusiasm in Southey, derived from the only sources of poetic inspiration, nature and life. And with the revival of Romance and of the Epic spirit, our study may fitly end. After at least one hundred years of a barren poetic theory, we draw near to that Wordsworthian declaration, our most luminous definition of the whole art of poetry—"the breath and finer spirit of all knowledge, the impassioned expression that dwells in the countenance of all science."

Some Disputed Points in the Theory of the Steam Engine. By Professor A. L. MELLANBY, D.Sc.

[Read before the Society, 11th March, 1908.]

IN presenting a paper dealing with the steam engine before a Philosophical Society, it seems necessary that some preliminary explanations should be offered for the selection of such a subject. A general idea is prevalent that the steam engine is so practical a thing that a scientific investigation into its properties and peculiarities is entirely out of place. Such is far from being the case, and the main object in bringing the subject before this Society is to induce those devoted to pure science to give some of their time to the interesting and intricate researches needed for a full understanding of what is taking place in a steam engine cylinder.

It is to be deplored that the greater part of the experimental work done in this line has been of the most rudimentary character, and although many investigations have been carried out to determine the effect of different arrangements upon the economy of engines very little has been done to determine why one arrangement is more economical than another. We are thus, at the present day, in the unfortunate position of having no rational theory of the steam engine, and what is worse, of having only a small minority aware of the necessity for such a theory.

When one realises the enormous number of equations that have been solved dealing with the steam engine from a thermodynamic point of view, and the still greater number of engines that have been built, it seems remarkable that theory and practice have not kept more closely together. The reason for this aloofness of the scientific and practical man appears to be, on the one hand, that very few of the theorists have ever appealed to experiments to raise their equations above the status of speculations. On the other hand, the man of practice has for the most part looked with suspicion upon the suggestion that a mere scientist could help him to improve the efficiency of the machine upon which he is working every day. Even the advent of the college-trained engineer has done little to bring the two classes into closer agreement, for the tendency has been, and seems to be now increasing, to give more weight to the technical subjects, and to omit more and more the subjects of mathematics and pure science from the students' curriculum. For this reason an engineering student is often quite unable to pursue a difficult line of research. He has little or no acquaintance with the instruments necessary for exact measurements, and in too many cases his mathematical knowledge is insufficient to enable him to comprehend the full significance of his experimental results.

It may seem remarkable that, at the present day, there should still be any uncertainty about fixing the dimensions of engines so as to give the best results with steam of a given pressure. Such, indeed, is the case, and those interested will know that each manufacturer determines the number of expansions to be given to the steam passing through his engine, according to his own notions. The experience of over 100 years has given us some rough ideas of what these should be, but even now a perusal of the current engineering literature will show that different individuals have widely divergent views upon this subject.

The nature of this problem can be best understood by referring to Fig. 1. In this case the relative pressures and volumes of steam expanding adiabatically between an admission pressure of 225 lbs. per square inch and a back pressure of 3 lbs. per square inch are shown. It is well known that the area of this diagram represents the maximum work that can be obtained from the steam, and it would appear that, so far as indicated work is concerned, the steam ought to be allowed to expand until its pressure is equal to the back pressure. A little consideration will show that on account of frictional resistances this would give too large a number of expansions, and that we really ought to stop expansion at some point *A*, and so have a drop of pressure at release. Even with this limitation the number of expansions is still very large, but, until quite recently, a large number of engineers thought that the results given by such diagrams, would, if applied, enable them to build engines of maximum economy.

In actual practice it is impossible to work with so large a range of pressure in one cylinder, and the same figure shows what happens when the work is divided between four cylinders. It will be noticed that on account of wire drawing and compression the

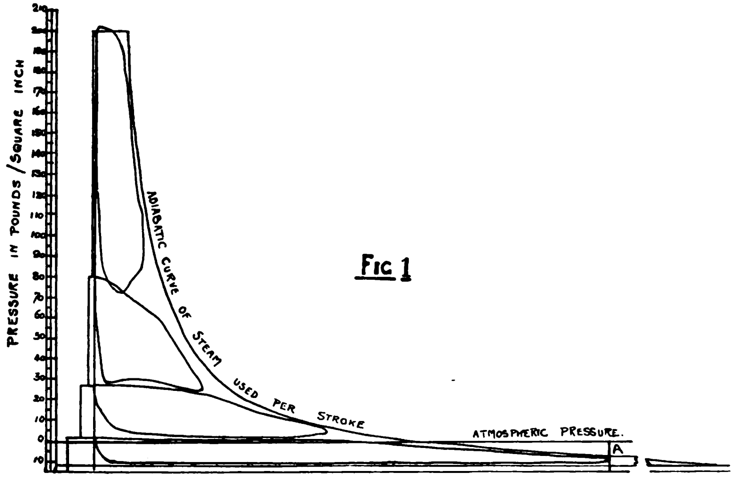

PRESSURE IN POUNDS / SQUARE INCH
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10
ADIABATIC CURVE OF STEAM USED PER STROKE
ATMOSPHERIC PRESSURE.
A

FIG 1

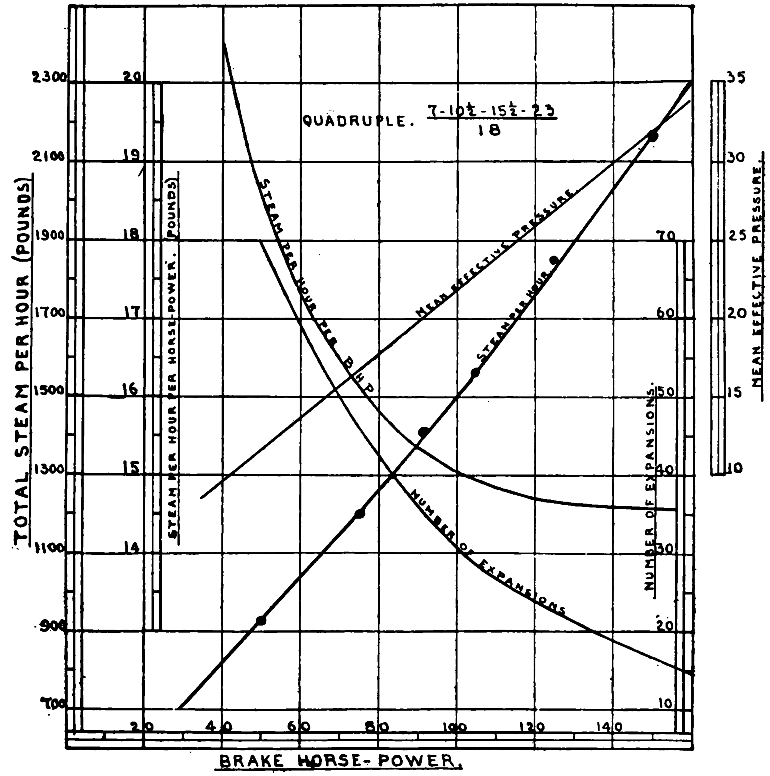

QUADRUPLE. 7-10½-15½-23 / 18
TOTAL STEAM PER HOUR (POUNDS)
2300 2100 1900 1700 1500 1300 1100 900 700
STEAM PER HOUR PER HORSE-POWER. (POUNDS)
20 19 18 17 16 15 14
NUMBER OF EXPANSIONS.
70 60 50 40 30 20 10
MEAN EFFECTIVE PRESSURE.
35 30 25 20 15 10
STEAM PER HOUR PER B.H.P.
MEAN EFFECTIVE PRESSURE
STEAM PER HOUR
NUMBER OF EXPANSIONS
20 40 60 80 100 120 140
BRAKE HORSE-POWER.

FIG 3

actual work obtained is less than that shown by the simple pressure-volume curve. It can also be seen that these losses of area will depend upon the number of expansions, and that, within limits the earlier the point of cut-off the greater will be the proportionate losses. It becomes evident then that although a large number of expansions seem necessary to get the maximum amount of work from the steam, yet the greater the number of expansions the greater will become what may be called the indicator card losses. How these losses increase with an early point of cut-off can be seen in Fig. 2. In this figure are shown in full lines the indicator cards from the 1st and 2nd intermediate cyclinders of the quadruple expansion engine referred to in Fig. 1. The broken lines show the card from the larger cylinder when it is used as the intermediate cylinder in a triple expansion engine. In both cases the same high-pressure cylinder was used with the same point of cut-off and the same admission pressure, but in the triple expansion the 1st intermediate cylinder of the quadruple was omitted. It will be noticed that the volume at cut-off in the broken card is the same as that at cut-off in the higher full card. It might, therefore, be expected that the admission pressure would be the same in both cases. It will be seen, however, that the card showing the expansion carried out in one cylinder with the early cut-off indicates a considerable loss of area when compared with the cards showing the work divided between two cylinders.

In addition to the card losses here mentioned, it will be found that in the actual engine the steam used is considerably greater than that required to fill the high-pressure cylinder to the point of cut-off. In Fig. 1 the volume of the adiabatic curve shown is the volume of the steam actually used, and this is always greater than the volume of the indicator cards at the same pressure. Experiment shows that the difference between the weight of steam actually used and that shown to be present in the cylinders by the indicator is, for the same engine with the same admission pressure, practically constant for a large range of expansions. It can thus be seen that for a large number of expansions the steam losses will be a large proportion of the total steam used. It has already been seen that card losses tend to increase with number of expansions, and it therefore becomes apparent that the idea so long prevalent that the steam should be allowed to expand until its pressure is nearly equal to the back pressure must be abandoned.

The actual trial results obtained from the engine which furnished the indicator cards shown in the previous figures are given in Fig 3. To a base of brake horse-power a curve of steam used per hour has been drawn. From this curve the values of the steam per hour per brake horse-power have been calculated and then plotted to the same base. Further curves, giving the number of expansions and the mean pressures, are also shown. It will be noticed that within the limits of the experiment the point of maximum efficiency has not been reached, and it can safely be assumed that at least 14 expansions with a mean pressure of over 35 lbs. per square inch might safely have been used. Since many engineers imagine that a mean pressure of 25 lbs. per square inch would have given maximum economy with this engine, it is easy to see the great importance of this piece of experimental work upon engineering practice. Instead of the large and expensive engine being necessary for economy the desired object is obtained by the smaller and, therefore, cheaper engine. The results given by all other trials that have been published point in the same direction, and it is curious that engineers have so long persisted in regarding the imaginary engine with its early cut-off as the standard of perfection. Indeed, at the present day, small versus large number of expansions is still a disputed point, notwithstanding the amount of experimental evidence that has been accumulated in favour of the former system.

It has already been mentioned that the losses in steam engines may be divided into indicator card or area losses and steam losses. To the members of this society the steam losses will probably be the more interesting, as the various theories that have been propounded to account for them have caused much discussion in engineering circles.

The explanation usually given to account for the fact that an engine uses more steam than is shown by the indicator is somewhat as follows. The exhaust steam leaves the engine at a comparatively low temperature, and during its exit cools the cylinder walls and clearance surfaces. At admission the hot steam comes into contact with this cooled metal and is immediately condensed More steam rushes in to take its place, and at cut-off, therefore a mixture of steam and water is in the cylinder. The water

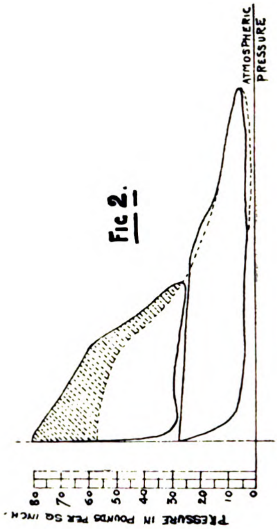
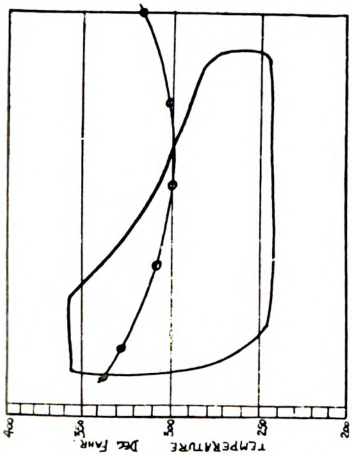
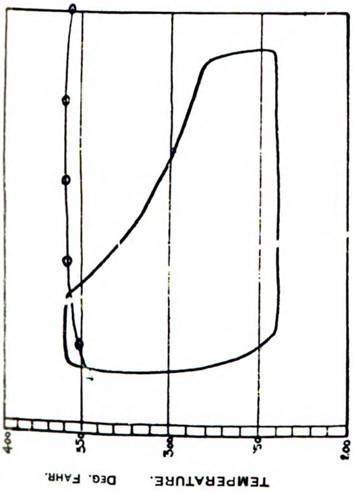


Fig 2.



NO-JACKETS TRIAL.



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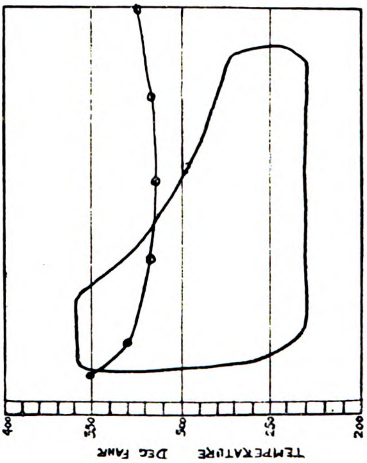

SUPERHEAT TRIAL.

Fig 6

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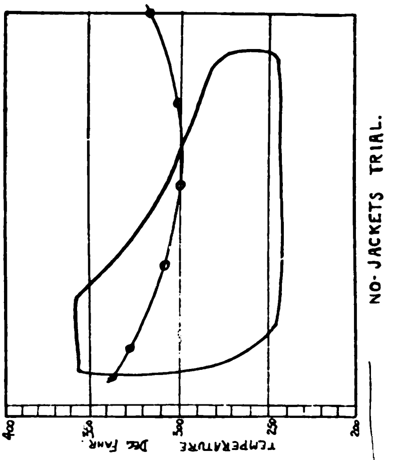
Proceedings of the Royal Philosophical Society of Glasgow, 1907-1908. *Vol.* XXXIX. *Diagram* III.



NO-JACKETS TRIAL.

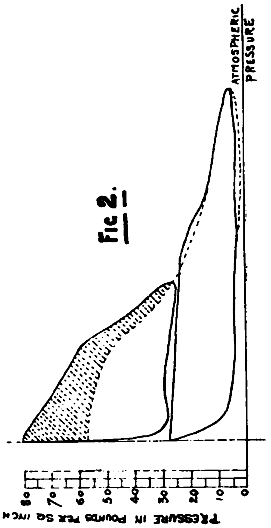
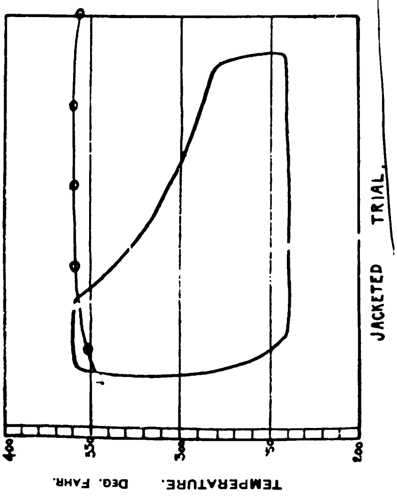
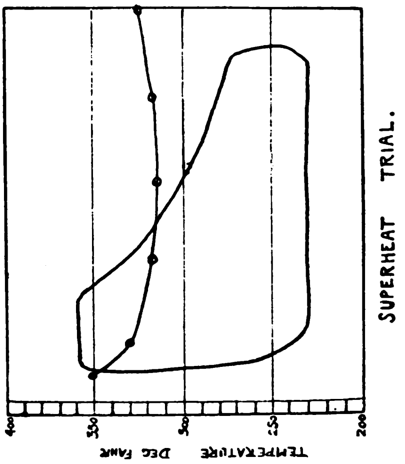


FIG 2.



JACKETED TRIAL.



SUPERHEAT TRIAL.

FIG 6

assumed to lie upon the cylinder walls as a film. For the first part of the expansion stroke further condensation takes place, but towards the latter end of the stroke, as the temperature of the steam diminishes, the film re-evaporates. This explanation is so simple, and appears to account so satisfactorily for the known facts that it has been accepted without hesitation by the vast majority of engineers. In some of the older text-books it is definitely announced that the temperature of the inside skin of the metal walls closely follows that of the steam, although later writers have, to some extent, modified this statement. A text-book published so late as this year assumes that the metal for a thickness of $\frac{1}{100}$ of an inch follows the temperature changes of the steam, and on this assumption calculates the amount of heat that will be absorbed in the process. It is proposed to examine somewhat closely this "initial condensation" theory, and to show that in many instances it will not account for experimental results.

If the surface of a metal plate is made to go through a series of simple harmonic temperature changes, so that $T = T_1 \cos\theta$, where T is the surface temperature at any time, and T_1 the range of temperature, both measured from the mean, it can be shown that the temperature within the metal at a distance x from the surface is

$$T = T_1 e^{-\mu x} \cos(\theta - \mu x)$$

$$\mu = \sqrt{\frac{N\pi}{\kappa}}$$

N = Number of periodic changes per minute.

$$\kappa = \frac{\text{Conductivity}}{\text{Thermal capacity per unit volume}} = \frac{K}{c}$$

If Q = heat flow per unit time

$Q = -K\frac{dt}{dx}$ when $x = o$, and from this is obtained the amount of heat flowing into the metal per cycle $= \frac{\sqrt{2}\,K\mu T_1}{\pi N}$

If the values $K = 5 \cdot 4$, and $\kappa = 1 \cdot 2$ are taken for cast-iron, the heat flowing into the metal per sq. ft. per cycle $= \frac{4T_1}{\sqrt{N}}$

In a steam engine the temperature changes of the steam are not simple harmonic, but very little error is involved in assuming them to be so. The writer has analysed the indicator card of a steam engine, and obtained the first seven terms of its equation by the Fourier method. It was found that the difference between the heat absorbed by a metal surface undergoing either that cycle, or a simple harmonic cycle of the same range would be negligible. It therefore appears from the initial condensation theory that the steam used by an engine ought to have some relation to the square root of its revolutions per minute. Many attempts have been made to construct a formula on this basis from which the consumption of an engine might be predicted, but all have failed. It is remarkable that this failure did not tend to discredit the initial condensation theory.

It will be well to point out that the steam to be accounted for is a very large quantity. In few cases is it less than 20 per cent., and in many cases it is as much as 60 per cent. of the total steam used. Any remedy therefore which leads to its elimination will be welcomed by engineers.

Professor Cotterill has shown, in his book on the steam engine, that although this missing steam is usually a very large amount, it would be greatly increased if the cylinder walls did have the same temperature range as the steam. After considering a number of cases he came to the conclusion that the walls were raised to the temperature of the admission steam, but that they never fell to the temperature of the exhaust steam. So far as the writer knows this statement of Cotterills has not been referred to by any of our British authors.

It is obvious that the solution to the problem lies in the determination of the temperature fluctuations of the metal. The mathematician might solve the equation $(\theta - T)e = K\frac{d\theta}{dx}$ when $x = o$, which would give the temperature changes of the walls if the emissivity term e were known. But the rates at which metal will give out its heat to wet and dry steam are not yet known, although some information has been obtained upon the rate at which steam will give out heat to a metal surface. An experimental determination of the temperature fluctuations is, however, the more satisfactory method, and it is surprising, when the commercial importance of the result is considered, that this problem has not been solved long ago. Perhaps the earliest worker in this field was the late Mr Bryan Donkin who attempted to observe the fluctuations at different distances from the surface by means of mercury thermometers. The method was entirely unsuited for the purpose, but Donkin's results showed that the mean temperature of the metal was much higher than the mean of the steam. This shows, almost conclusively, that the range of the metal temperature must have been less than that of the steam. Attempts were made by Hall in America to solve the problem by using a thermo-junction to measure the fluctuations of temperature at a known distance from the inside. The experimental difficulties do not seem to have been surmounted by Hall and his actual results are of little value.

The most complete trials published are those made by Callendar & Nicolson at M'Gill University, Montreal. They made considerable improvements upon the methods used by Hall and obtained results which appear to be beyond all question. They found that in a single cylinder steam engine whilst the steam varied from 212°F to 330°F during a revolution, the temperature range of the metal surface was not more than 7°F. The average temperature of the steam was 245°F., but the average temperature of the metal was 300°F.

It is obvious that the appeal to experiments has disclosed a state of affairs entirely different to that previously imagined. The temperature of the metal is not even raised to the maximum temperature of the steam and is at all times far above the exhaust temperature. On referring to the equation for the heat flowing into a metal plate undergoing a periodic temperature change it will be at once apparent that so small a fluctuation can only account for a small amount of condensation. In the engine of Callendar & Nicolson there was, however, a very large amount of missing steam, and since condensation could account for only a fraction of this it appeared to them that valve leakage must be responsible for the greater part. A separate series of experiments to determine this leakage under nearly working conditions gave results which were in remarkable agreement with the hypothesis. The results therefore of this research indicate that initial condensation is not the evil it has so long been considered, that the more prosaic leakage through valves is the point to which engineers ought to direct their attention.

Although the work of Callendar & Nicolson was published in 1895 their ideas up to the present day have been accepted by few. A leaky valve appears to be a personal reflection upon the skill of an engineer, and he much prefers to believe in the hazy and mysterious explanation afforded by the phrase initial condensation.

One somewhat remarkable result from Callendar & Nicolson's experiments was, that the leakage part well-made slide valves of different types appeared to follow a regular law, and not to be capricious and accidental. Their work on leakage has been to a great extent confirmed by experiments made by Professor Capper, given in a paper read before the Institute of Mechanical Engineers.

It has been proposed lately that although initial condensation upon the metal surfaces may be comparatively small, yet there are other causes than valve leakage to account for the remainder of the missing quantity. It is suggested that some water may remain in the cylinder either upon the walls or mixed with the steam in the clearance space, and that the incoming steam condenses in comparatively large quantities upon this water. Whether there is any truth in this hypothesis it is impossible to say at present, but it will be obvious that much experimental work remains to be done before the whole subject is cleared up. To any physicist desirous of conducting a difficult and interesting piece of research work, a series of experiments to determine the amount of condensation upon a metal surface exposed to steam of varying temperatures is suggested. The work of Callendar & Nicolson must be confirmed by other experimenters before the general body of engineers will recognise its importance, and it might be greatly extended. Instead of a steam engine a plain cylindrical vessel with outlet and inlet cocks for the steam could be used.

To go further into the question raised by the work of Callendar & Nicolson it is obvious that, if their experiments are correct, the old ideas about the steady rate of condensation of steam upon metal surfaces must be revised. It has generally been assumed that when steam came in contact with a metal surface colder than itself the rate of condensation was practically infinite. That is to say the steam at once raised the metal surface up to its own temperature. After Callendar & Nicolson's discovery, from their temperature range measurements, that the rate of condensation appeared to be limited, they conducted a further piece of research with steam flowing steadily through a condenser. From a limited number of experiments they discovered that if $T=$ temperature of the steam and $\theta=$ temperature of the metal surface, the condensa-

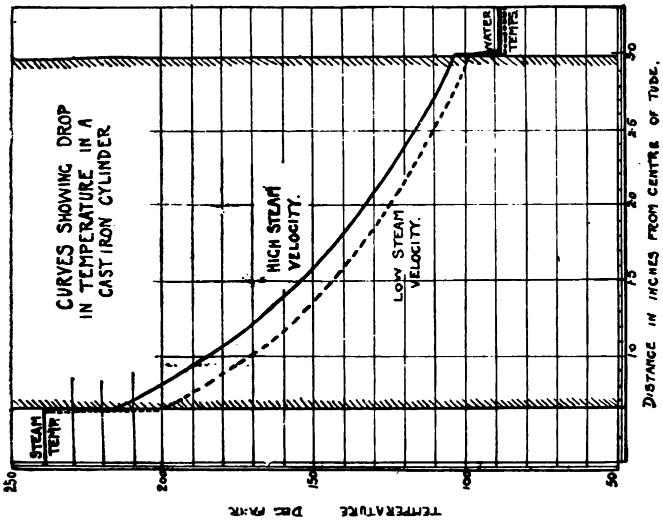

CURVES SHOWING DROP IN TEMPERATURE IN A CAST IRON CYLINDER.
HIGH STEAM VELOCITY.
LOW STEAM VELOCITY.
STEAM TEMP.
WATER TEMPS.
TEMPERATURE DEG. FAHR.
250
200
150
100
50
DISTANCE IN INCHES FROM CENTRE OF TUBE.
10
15
20
25
30

FIG 5

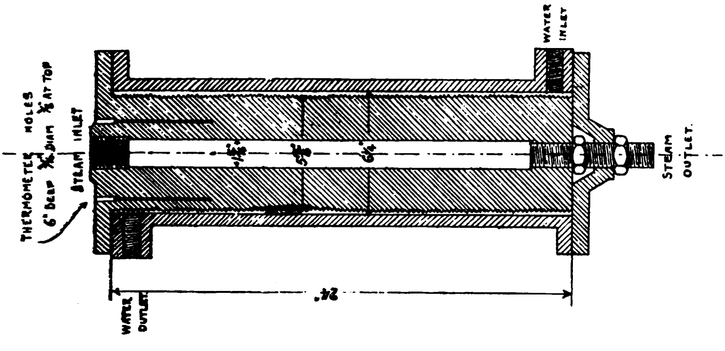

THERMOMETER HOLES 6" DEEP ⅜" DIAM ⅛" AT TOP
STEAM INLET
WATER INLET
WATER OUTLET
STEAM OUTLET.
1½"
5"
6¼"
24"

FIG 4.

tion per square foot, per second, when a maximum was ·74 $(T - \theta)$ B.T.U. The writer has had some experiments made with a condenser specially adopted for the use of students and shown in Fig. 4. It will be noticed that the condenser tube is very thick, and that mercury thermometers are introduced at different distances from the surface. The apparatus is scarcely suited for exact scientific work, but can easily be used by students, and will give results at all events approximating to the truth.

The steam passes through the centre of the tube and the condensing water is on the outside. The amount of condensation can be determined by measuring the quantity of condensing water used and its rise of temperature. The temperature of the condensing surface may be obtained either by noting the temperatures at different distances from the centre, plotting them and producing the curves to the extreme points, or by taking one temperature and using the equation for the steady flow of heat in a thick cylinder. One objection to this apparatus is that whilst the temperatures vary from top to bottom they can only be observed in one horizontal plane.

In Fig. 5 are shown some temperature curves obtained with this apparatus. It is apparent that the temperature of the metal does not rise to that of the steam even when the steam is passing through at a high rate of speed. From the lower curve it will be seen that when the temperature of the steam was 240° F. the adjacent metal surface was only 201° F. In this case the steam would be entering the condenser at a velocity of 34 feet per second, and the condensation was equal to 9·35 B.Th.U's per square foot per second. In the higher curve the steam was passing at a much higher velocity, 74 feet per second, and the condensation was 10 B.Th.U's per square foot per second. In this case for the given steam pressure and rate of water flow the condensation was nearly the maximum possible, and even under these conditions the metal temperature was 26 degrees below the steam temperature. The condensation in B.Th.U's per square foot per second may be expressed in the first experiment by 0·19 $(T - \theta)$, and in the second experiment by 0·274 $(T - \theta)$. This again opens up a wide field for further research, and much might be done to see the effect of speed and pressure of steam, and rate of water flow upon the condensation.

Some further experimental work done by the writer upon a steam engine will now be given which appears to support Callendar & Nicolson's theory of the comparative unimportance of initial condensation. The experiments were carried out upon a horizontal compound engine, and the results show the effect of alterations of the cylinder wall temperatures upon the steam used. The figures in the table refer to the high-pressure cylinder only.

		No Jackets.	Ends and barrel jacketed.	Super-heated steam used.
Steam used per hour,	lbs.	2184	1980	1930
Indicated weight at cut-off,	lbs. per hour	1431	1470	1681
,, ,, at release,	,, ,, ,,	1781	1760	1750
Missing quantity at cut-off,	,, ,, ,,	753	510	249
,, ,, at release,	,, ,, ,,	403	220	180
Increase of indicated weight between cut-off and release,	,, ,, ,,	350	290	69
Mean temperature of clearance surface,		335°F	342°F	350°F

The temperatures of the metal, obtained by mercury thermometers in the cylinder walls, and the temperature of the steam assuming it to be saturated at all parts of the stroke are shown in Fig. 6.

Taking, first, the figures for the trial without jackets, the fact that there are 753 lbs. per hour missing at cut-off is usually put down to initial condensation. The increase of indicated weight—350 lbs. per hour—between cut-off and release is said to be due to re-evaporation during expansion. The same explanations would be used for the corresponding figures in the other trials. An inspection of Fig. 6 will show that these explanations are most unsatisfactory. The temperatures of the clearance surface and of the cylinder barrel are seen to be much higher in the jacketed than the unjacketed trial, and yet we are asked to believe that the evaporation will be less from the hotter than the colder metal. The same thing applies to the trial with superheated steam, and ars most unreasonable. It seems quite clear that the missing quantity is composed to a great extent of valve leakage, and that the jacketing and superheating, although they have reduced the initial condensation, have had a much greater effect upon the valve leakage.

As evidence of the little that is known about the condensation of steam, and of the confusion in the minds of many upon the subject, it is usually said that the cylinder walls are covered with a film of water, and that this film causes initial condensation to be so great. Once remove this film and the condensation will be greatly reduced. On the other hand it is asserted that in a condenser the rate of condensation is lessened by the presence of this film upon the surface of the tubes, and that, if it can be removed, our condensers will be more efficient. As a matter of fact steam when condensing upon a metal surface, does not form a film. From observations made through a glass tube it appears that the steam condenses in small globules which increase until they obtain a certain size and are then swept away. From the experiments of Professor Weighton upon condensers, and those previously given in this paper, it is evident that if these globules can be swept away rapidly the condensation will increase up to a certain point. The idea, therefore, that a thick film of water upon a metal surface increases the condensation must be abandoned.

The reasons generally given for the increased economy due to the use of superheated steam in engines are also open to question. It is generally stated that the reduction in the quantity of steam used when superheated, is on account of its reluctance to condense upon the metal walls. That this is not the case has been shown by experiments upon saturated and superheated steam in the condenser shown in Fig 4. Saturated steam at 20 lbs. pressure was passed through the condenser, and showed a condensation of 13 B.Th.U's per square foot per second. In a second experiment the steam was superheated about 170°F. at the same pressure and then passed through the condenser. No change in the amount of condensation was observed, which appears to show that superheated steam will condense as rapidly as saturated steam upon a metal surface. It, therefore, follows that the undoubted gain obtained from superheating is due, not to the reduction of initial condensation, but simply to lessened valve leakage.

The writer has, on many occasions, been attacked for suggesting that the initial condensation theory was only true to a limited extent. He trusts, however, that he has clearly shown, from the small amount of experimental evidence brought forward, that the condensation of steam upon metal surfaces follows laws altogether differing from those generally imagined to exist. The field for experimental research upon this subject is a very wide one, and he trusts that some physicists may be induced to take up further work upon a branch of such commercial importance.

Queensland in 1906. By Mr THOMAS WILSON.

[Read before the Society, 8th April, 1908.]

(ABRIDGED).

QUEENSLAND occupies the whole of the north-east corner of Australia. Its coast line is about 2300 miles, and has a number of harbours round which important towns have gathered. From Port Danger in the south it extends northward about 1300 miles; from east to west about 800 miles. The latest estimate of its area gives 670,500 square miles, over 429 million acres. On this there are about 550,000 persons (excluding aboriginals—say 20,000). Settlement on the more thickly peopled areas is about 23 per square mile, and on some others there are 23 miles to one person.

The coastal strip of land, roughly given as averaging from 50 to 100 miles, lies for the most part low, but from this a range of mountains rises, forming the western plateau. There is a want of the very high levels and so of the widely distributed rain, the highest ranges being about 5400 feet.

I am unable to speak with knowledge of all that goes to explain the climate and the varied rainfall of Queensland. Its geographical position and physical conformation make this clear to the scientists who tell us of the northerly winds travelling over great breadths of ocean, arriving in a highly saturated state and depositing a heavy rainfall over some of the coastal regions, but cut off by the mountain range from the plains of the interior.

As to climate, during my sixteen months' stay I enjoyed it at all seasons, and found it most conducive to health; even on Christmas Day at Warwick, with 103° in the shade, I found no discomfort in the dry heat. The grand mean temperature in Brisbane, taken at 9 a.m. and 3 p.m., runs from 63° in winter to 81° in summer. The mean daily range of temperature during the year is 13·7 in April, to 23·7 in July. For the principal towns the mean temperature during the year is Toowoomba 61°, cool, temperate and bracing; Roma 65°, Brisbane 68°, Rockhampton

72°, Townsville 75°. Within the climatic conditions of the several parts of Queensland every type of invalid, I could well believe, might find something tending to restore health. It is instructive and has its lessons for the future, that the Queensland death-rate which was 22·97 in 1884, has fallen to 9·56, and is the lowest in Australia, and that notwithstanding increased settlement in the north. People of other than European extraction—a diminishing number—are 3·41 of the population. *Their* death-rate is 14·62, Europeans 9·37. Brisbane at 10 per thousand is the lowest of the capital cities of Australia.

My visit north to Townsville, Cairns and Cooktown was in April, the autumn season, and then the conditions were warm but soft and balmy. While I found the people keen to tell, seeming even to boast of their severe summer, disposed to sympathise with themselves and invite sympathy, I saw only healthy and alert men and women and bright and happy children. "Sweat and be saved," is said to be a maxim of the strenuous Roosevelt, and there is reason to think that once men forget or ignore the tradition that tropical labour *must* be coloured labour, the northern regions will become increasingly the home of an industrious white population, raising on their own small holdings all manner of tropical and sub-tropical products. There may be some discomfort in such labour, some readjustment of hours and habits needed, but the attraction of the sun, the strange beauty of the north, and its great and varied productivity, will continue to challenge the energies of the vigorous and the enterprising. Occupation and systematic cultivation have greatly improved the coastal districts. Scientists are mastering tropical conditions and diseases and the parasites that produce them. Old preconceptions are giving place to fuller knowledge, and places that even in our time were reckoned the white man's grave are recognised as among the sanatoria of the empire.

It was in 1823 that the Brisbane river was discovered. For some years its neighbourhood became a penal colony, but that ceasing in 1839, strenuous pioneering resulted in such settlement as warranted its separation from New South Wales, and in 1859 Queensland became a self-governing colony, and had assigned to it a territory 7½ times the size of Great Britain, and having, it is believed, a larger quantity of useful land than any State in the Commonwealth.

The Brisbane river winds, as the Thames does, through the centre of the capital, the business portion being on the north, the larger population on the south side. Cross communication is by the fine Victoria bridge, 1021 feet in length, and by numerous ferries. The average width of the river is 300 feet, and it has been dredged to 27 feet at high water, allowing vessels of very large size to lie at the city wharves. These for the most part are private property. The tramway system, of which, though a private British enterprise, Brisbane is very proud, connects the centre with all parts of the city and suburbs. The cars, as it happens, all pass the Post Office and each carries a post box cleared at every journey.

The city has a population of 60,000, and has two Municipal Councils, north and south. Including the suburbs within a radius of 10 miles, the population is about 132,000. The rateable valuation of the city, comprising about 15,000 dwellings and business premises, is about £8,000,000 capital value, and on this the general rate is about 2d per £.

As it is a question of the day here, I may add that the Act regulating local taxation requires that rateable property, no matter of what description or where situated, is to be "valued at the fair average value of unimproved land of the same quality held in fee simple in the same neighbourhood." Taxation for services rendered is treated differently—a private dwelling and a warehouse with many workers being for sanitary and such purposes rated according to estimated service. In its business enterprise, and in all that goes to make a live city, Brisbane is up to date, save from a Glasgow point of view that she has allowed to slip through her fingers monopolies that might have been managed municipally. Its churches and its theatres, its shops and its schools, its associations for the promotion of science and art, its societies for all manner of things meet every variety of mind and taste. Its climate permits great brightness in the city life, the Sunday congregations are often like some large wedding party, and the Saturday holiday-makers by road, rail or river are dazzling in their light and gay garments. The level of comfort is high, but the cost of living is increasing. The people are not finding that "the foreigner pays" the import duties, and the increasing facilities and cheapness of transport to the markets of the world are raising the local price of meat, butter and other produce.

In Brisbane, as all over the State, warehouses and shops, with the exception of restaurants, fruit shops, tobacconists, hotels, &c., must be closed by 6 o'clock on four days of the week, by 1 o'clock on one day, and may keep open till 10 on one night. No one demurs or would seek to change it. Forty-eight hours per week is the normal factory time, but certain small permissions can be had for overtime. In town and country alike sport has a great grip on the community. A bush race meeting is something genuine, enjoyed by all for fifty miles round. Brisbane has its beautifully kept racecourse, and there the voice of the raucous bookmaker is heard, and also the movement of the more decent, if more dangerous, totalisator, a betting machine arrangement, under license of the Government, who exact 5 per cent. of all winnings, and last year drew £10,673 from that source. Out-door games and amusements are not less strenuous than at home. For the most part they are confined to the Saturday afternoon, the usual half-holiday, for one misses the long light of our spring and summer months in Scotland. The latest sunset in Brisbane is 6-45, the earliest 5 o'clock, and darkness comes down quickly.

The Legislative Council—the Upper House—numbers just now 42, the maximum yet reached. As a nominated chamber it is subject to the usual criticism when it rejects or seriously alters the bills of the Assembly, and lately its action led to a General Election, the results of which suggest that reform of some kind is near. That the Federal Senate, as well as the House of Representatives, is elected by adult suffrage suggests one line of reform, but the plan sketched recently at home, or some kind of referendum, may be preferred. The Legislative Assembly elected for three years numbers 72, each receiving £300 per annum and certain travelling allowances. The session of 1906 was of 70 days, averaging 7 hours each. There is a consensus of opinion that the number of members should be reduced, 48 has been named as sufficient, but "the dread of something after puzzles the will." Probably a similar hesitancy would arise at home, though here salary could have no place in the decision. Every man and woman, not under 21, a subject of the King, one year in Queensland, is put on the electoral roll by the police, who revise the lists every two months. In several urban constituencies women voters outnumber the men, and it is evidence of interest in politics that at the election in February, Brisbane women polled 84 per cent.

of their number, the men 85 per cent. In the Federal and in all State Parliaments, save Victoria, women have now votes.

In Queensland as in the Commonwealth Parliament there are three parties. They are all advanced, and the ordinary degrees of comparison really represent the situation. The two larger parties each number 25, and are led by two able Scotchmen, Mr Kidston and Mr Philp, the former of whom, Premier for a third time, is proud on occasion to call himself an "ironmoulder from Falkirk." The Labour party number 22, so that here again, as in the last parliament, there are the elements of a very troublesome situation. It has seemed at times as if the larger parties should and would unite, for their differences are more personal than real, but probably the arrangements necessary have proved too difficult, and for last parliament and this Mr Kidston has elected to work with the Labour party, who however claim entire independence, and have a restive and exacting caucus behind them. Among this party there are men who would use the familiar formula about nationalizing the land and all means of production—men impatient at the slow progress towards social betterment and dreaming of a short cut—but for the most part they are practical men, ready to support what they regard as practicable and equitable and for the general as well as the industrial well-being. At the same time their very timid views as to immigration and railway extension must greatly embarass Mr Kidston and his government in the policy of expansion they desire to pursue and which is vital to the progress of the country.

Newspaper partizanship can be very bitter in Brisbane, as in London, very generous too with its space, but sometimes the manipulation of news and the comments thereon set the perspective all wrong, and give unjust views of the politics and politicians of the hour. The cable agencies, too, in the news and views sent and received, seem so lacking in any real sense of proportion, that it is impossible to gather from them a true conception of the position either here or in Australia. Some trivial incident that may be twisted into a striking paragraph is seized, and this, further distorted in its passage through the press, begets misunderstandings irreparable. Surely our newspapers might give a little more space, and show some serious interest in the States and Commonwealth of Australia, seeking so bravely the solution of many problems of world-wide interest, old and new.

The greatest factor in Queensland's story is the rainfall—and there are striking differences between the several localities and between different years, ranging as to places between 169 inches and 19 inches, and as to years between an average of 41 inches and 17 inches. We who have not seen what these variations imply, arid desolation and luxuriant plenty, cannot realize the anxieties of the seasons. The rain gauge is to Queensland what the clinical thermometer is to the nurse. Every morning the newspapers give the readings from all parts of the State. It is the first column one turns to, and that is a happy day when the list is long and leaded type tells of a "splendid rainfall" or of "continuous rains all over the country." The delight is hardly lessened should they add "Western country flooded. Roads impassable. Station supplies running short."

The Englishman is said to take his pleasures sadly, the Queenslander takes his sorrows with a light heart. The sun is in the blood and begets a happy hopefulness. He has a something, the wine of life, which in the words of old Omar "robs to-day of past regrets and future fears." Possibly he thinks too little of the chances and changes of life, and makes no adequate provision for such probabilities as experience should have made plain. In Queensland, as elsewhere, this is specially true of the man on the land. Every agricultural report and every newspaper deal with it, and tell the farmers how their easily garnered ensilage might keep up their supply of milk when the dry pinch comes, and maintain their exports of butter to secure the high prices ruling here in winter, but the warnings pass for the most part unheeded.

The Queensland rivers do not lend themselves to any great scheme of irrigation, though something has been done in a small way. Artesian wells are a very attractive subject, and since their discovery the face of the Western country has been much changed. The first experimental bore was at Blackall in 1885, and was supervised by Mr J. B. Henderson, Queensland's hydraulic engineer, and by Dr R. L. Jack, then their geologist. From that time the boring has been more or less continuous, and over 1000 of these wells now exist almost all belonging to private owners. The average depth is about 1200 feet, and the cost now may be estimated at 20/ to 26/ per foot bored and cased. Some attempts, after much labour, come upon primary rock in which no water may be looked for. I am able, through the kindness of Mr

Henderson, to show on the screen photographs of several of these wells, and sketches showing the character and varied depths of the borings.

The general opinion seems to be that the rocks which contain the water form part of the lower cretaceous formation. In this we have a porous body which absorbs greedily the rain that may percolate from 5000 square miles of intake area in Queensland, and allows it passage to underlying water-beds of incalculable collective volume. From these water-beds, when reached by the bore, the Artesian supply, under pressure from a portion of its volume, is understood to be derived. Dr Jack also asserts that some important rivers gradually disappear, their beds forming an outcrop of the cretaceous formation, bibulous rocks that drink up the waters as they pass. Dr J. W. Gregory, now Professor of Geology in Glasgow University, and an honoured member of this Society, has written on this subject in his book "The Dead Heart of Australia." He distrusts the ordinary theory and believes that the rise of what has come to be called Artesian water is due to a more complex cause, that the wells, from whatever pressure flowing, are the outlets from a vast reservoir almost entirely closed, and that the waters discharged from it have risen from the deeper layers of the earth's crust, and must have been collected during the course of centuries and probably milleniums. The wells vary greatly in volume, also in temperature and chemical constitution. Some are used only for stock, some reticulated through a town, give excellent supplies of water for domestic purposes. By the Winton bore "hot baths are had, land is irrigated, gardens and roads watered, lagoon and stream for bathing supplied, and the arid spot where it rushes forth is made into a reedy lake bordered with trees." It rushes out of the casing at 180°, and curative virtues are claimed for it.

As to the permanence of these supplies there is much difference of opinion among experts, some uttering warnings against the folly and danger of prevailing waste, and others saying that the wells are no more likely to dry up than the ocean to be drained. Professor Gregory's view is that "the Artesian water, if prudently used, would probably last till Central Australia were so well occupied that it could afford to provide a more costly supply." The outflow of the Queensland wells may be taken roughly at 500 million gallons per day, not one-tenth of this is required for stock, and making allowance for water that may not be suitable for irrigation, it seems likely that a full half of the whole supply could be so used with great advantage. It has been proved at Barcaldine in 1896, that irrigating with bore water doubled the wheat crop.

THE PASTORAL INDUSTRY began with the work of settlement, and continues the greatest. Though much of the old pastoral lands, long belittled as worthless for agriculture, has, under recent Acts, been bought back, and is now the splendid wheat growing country of the Darling downs, more than half the area of the State is still given over to pasture. The squatters of the earlier days were often from our best families, resourceful men with a little money and much courage. They have not simply looked on and let their sheep breed, they have been alert business men fighting, as it happened, drought, or flood, or fire, or rabbits and other pests, and all the time striving for the improvement of their flocks and fleeces. Wool has been improved in quality, the fleece has been improved in size. Every superficial inch of the creases in the fat sheep is covered with wool. In 1861, the average weight of a fleece was 4 lbs.; in 1891, 5½ lbs.; in 1907, nearly 8 lbs.

The years of drought played sad havoc with the fortunes of the pastoralists and even now many of the runs, representing tens of thousands of square miles, are in the hands of banks and mortgage institutions. That drought time was terrible, but the recovery has been rapid. In 1897, Queensland sheep numbered 17,798,000; 1899, 15,226,000; 1902, 7,214,000; 1906, 14,886,000. The average size of the flocks is nearly one half what it was 10 years ago. Statistics seem to establish that in comparatively small runs of 20,000 acres or so the proportion of sheep carried may exceed that of the larger runs by 40 or 50 per cent., and that in the adoption of more manageable areas lies the chief hope of minimising the enormous pastoral losses that occur in times of drought. The remedial efforts can be more concentrated, Artesian bores provided and their waters utilized to the best advantage.

As bearing on the price of wool and the prosperity of Australia, it is worthy of note that, concurrently with the rapid increase of her flocks and the consequent wool production, there has been, since 1895, a decrease of 28 million sheep in the flocks of other wool-growing countries. The prospects, therefore, apart from temporary fluctuations, seem very good. Unless fashion affect the demand for merino wool we may expect the price to be maintained, for any tendency toward increasing the output in Australia will be tempered by the growth of dairy and mixed farming, and by the breaking up of runs suitable for agriculture, and the needs of closer settlement.

The mineral wealth of Queensland seems to be incalculable. Gold has been produced to the value of £66,314,528, and other metals £18,546,940. Copper, tin, silver, lead, and many of the industrial metals are being mined now. Iron in a very pure state exists in large quantities, also great seams of Anthracite and other coal. Some day, when railways reach out to them, enormous mineral deposits will become available, and will transform the industries of the State.

AGRICULTURE. The land in cultivation keeps increasing, but even now is only 560,000 acres, the crops, comprising wheat, maize, barley, sugar, etc. While there is much valuable wheat growing land the production varies greatly through uncertain rainfall. The production of 1905 and 1906 was only half that of 1903 and 1904, and has at no time met the State's requirements, the excess in bread stuffs imported being, for 1906, valued at £336,000. Dairy farming has made the greatest progress, and the monthly cheque from the butter factory has been a great boon and an incentive to the small farmer. Effective State supervision, all through the operations, though resented by some producers, has established the reputation of Queensland butter and high prices are being obtained.

Queensland produces almost all the sugar of Australia and the production for 1906, which was a record one, was 184,377 tons, and adding the few tons from New South Wales, this is rather in excess of the Commonwealth's needs. The "White Australia" policy has sent the Kanakas home to their islands in the South Seas, and the labour got together as a substitute is not of the steadiest, but this difficulty may belong to the transitional stage. A bounty given by the Federal Government to facilitate the change from black to white labour has resulted in this, that while in 1903 only £50,454 was paid, in 1906 it had grown to £272,038. This bonus is to be reduced in 1911 by one third, and in 1912 by two thirds, and when finally withdrawn the real test will come. If the production increases growers must face the markets of the world, and with the low prices ruling that will be difficult. They may have to turn their attention to cotton and other tropical products.

The prospective settler has great variety of choice as to the size and kind of selection he may take and the terms are made easy. Year by year these farms are increasing in number and becoming freehold, but on the other hand some are forfeited, the settlers getting discouraged or otherwise anxious to be released. Possibly the realities of the settler's life found out their weak spot, found them unfit for it by temperament, by training, long habit, physical strength or character. This opens up an important point in the ethics of immigration. In Australia, as here, the unemployed have sometimes been set on the land and the result has been not only economic loss, but in most cases failure to improve the personal and the industrial situation. I have hinted that the Labour party are too timid as to immigration, but after all the settling of suitable people on the land cannot be wisely done without careful selection both of the land and the people. Queensland's latest proposals as to immigration are very liberal, and there is reason to believe that her statesmen are realising the importance of settlement on her wide and fruitful lands and of securing the right class of people.

RAILWAYS. The railways are constructed and owned by the State. 3500 miles have been completed at a cost of £24,346,000 and this represents 62 per cent. of the whole loan indebtedness. The net revenue has yielded over 4 per cent. on the capital expended upon open lines shewing the railways to be a very substantial asset against the debt so often cited, without due consideration, to the State's disparagement. Meanwhile land selection has so far outstripped the railway that agricultural farms have been taken up 40 to 60 miles from any line, and 270 miles from any port. Great areas of good land with sufficient rainfall are waiting the completion of the several lines to which the present government is pledged, and work on these is expected to begin in a few weeks.

EDUCATION. Education in Queensland is free, secular and compulsory. A party in the State has long been insistent on having a referendum as to providing unsectarian scripture lessons in State schools during school hours. This was agreed to in a recent session but only by the casting vote of the Speaker. No action has yet been taken, but the matter seems certain to be dealt with soon. When established in 1876, the Queensland system was understood to be the most progressive in Australia, but now re-organization is seen to be necessary, and is under consideration.

The returns for 1906 shew 1049 schools. Of these, 62½ per cent. have an average attendance under 30. That so many schools have been erected and maintained in thinly peopled areas is evidence of determination to secure education for the children, and is in line with our experience of democratic communities elsewhere. The greatest difficulty is in dealing with the very remote districts. Itinerant teachers are employed whose principal duty is to visit families for whose children no school is available. These itinerants are the "handy men" of the profession. Each has a buggy and four horses and all camping requisities. As illustrating the work, it is recorded that one of these in 1906 travelled 3212 miles and visited 99 families with 304 children; the total cost in salary and expenses being £368. These itinerants travel with school books, &c., and staying in each house a day or two, leave necessary books, and try to get father or mother or some suitable inmate to keep giving simple lessons in the three R's.

The total expenditure in the schools during 1906 was £302,599, net enrolment 95,415, and the average attendance 69,771. In private schools there were 12,706 on the roll.

The various State governments in Australia are studying the arts of the advertiser and by pen and picture rivalling one another in the effort to attract the tourist. Queensland lauds herself as "The Winter Paradise of Australia" and I would not quarrel with the name. Travelling by sea from Brisbane to Cooktown, one has every variety of beauty in the scenery and much to interest in the places by the way—from the magnificent forests, the ever-changing glories of the coast, and the wonders of the Barrier reef, to the great rugged grandeur of the Barron falls.

Notwithstanding meteorological conditions—the evils of which men are minimising and may yet master—the charm of its climate and its cloudless sky, the interest of its varied productiveness, the immense possibilities of its undeveloped resources, and the brave and progressive spirit of its people make Queensland a country of great attractiveness. She will reward the enterprise of those who seek her with a mind to work and the patience of those who will both work and wait.

[The lecture was illustrated by numerous photographs, diagrams and statistical tables shewn on the screen.]

Some Observations on the Consumption of Alcohol, and on the Comparative Death-Rate from Alcoholic Excess in England, Ireland and Scotland. By EBENEZER DUNCAN, M.D., Hon. Vice-President.

[Read before the Society, 30th April, 1908.]

IN a Presidential Address which I gave to this Society in 1898, I dealt incidentally with the Comparative Consumption of Alcohol and the Relative Death-Rate from Alcoholic Excess in Great Britain and Ireland. In that address I brought before you tables of statistics compiled from the Inland Revenue Returns for the twenty-five years period 1872-1896, and I showed that during that period the people of Scotland had steadily diminished their annual consumption of alcohol. I showed further that, in proportion to the diminished consumption of alcohol in Scotland, there had been a proportionate fall in its death-rate from certain diseases caused by alcoholic excess. On the other hand similar statistical tables for England proved that during this twenty-five years period the people of England had gradually increased their consumption of alcohol, and the Registrar-General's Returns for England showed a proportionate increase in the death-rate from alcoholic diseases. The conclusion I arrived at was that whereas at the beginning of this period 1872 to 1896 the Scotsman on an average drank more alcohol than the Englishman and suffered more, proportionately, from alcoholic diseases, at the end of the period the position was reversed, and the Englishman was found to drink more alcohol and to suffer more from the alcoholic excess than the Scotsman. Throughout the whole of this period of twenty-five years the consumption of alcohol in Ireland was less in proportion to the population than it was in the sister kingdoms, and the death-rate from alcoholic excess was correspondingly lower. I therefore formulated the opinion that without looking at the Inland Revenue Returns one could estimate the increase or diminution in the use of alcoholic beverages in a country by the increase or diminution in the death-rate from certain diseases which are known to originate in alcoholic excess.

I shall now consider more in detail the statistics of the decade 1897-1906 with the objects, first, of ascertaining the further changes which have taken place in the drink habit of the three divisions of the kingdom; secondly, what effects these changes have produced on the death-rate; and thirdly, I shall endeavour to account for the striking differences in the death-rate from alcoholic diseases in England, in which the alcoholic beverage mostly used is beer, and in Scotland where the common alcoholic beverage used by the masses of the people is whisky. The detailed table which I now show you has been made up from the annual statement entitled "The Drink Bill of the United Kingdom," compiled from the Inland Revenue Returns by Dr Dawson Burns, and published annually in *The Times* newspaper. I have checked his figures which I believe to be substantially correct. The decade 1897-1906 may be divided into two periods of five years. First, the quinquennium 1897-1901 during which there was an increase in the consumption of alcohol in all three

TABLE I.—*The Drink Bill of the United Kingdom.*

	Expenditure per Head.									Alcohol Consumed.		
	England			Ireland			Scotland			England	Ireland	Scotland
	£	s.	d.	£	s.	d.	£	s.	d.	Gallons	Gallons	Gallons
1897	4	1	9¼	2	14	2	3	1	9	2·41	1·50	1·69
1898	4	2	2½	2	14	10¾	3	1	1½	2·41	1·54	1·66
1899	4	5	0½	2	16	8¼	3	6	11	2·51	1·60	1·84
1900	4	3	2	2	18	10	3	8	4	2·46	1·64	1.82
1901	4	0	8¾	2	17	10¾	3	2	5¾	2·39	1·65	1.72
1902	4	10	2½	3	4	5¼	3	12	2	2·33	1·62	1·62
1903	4	7	0	3	4	10	3	5	2	2·20	1·99	1·64
1904	4	3	2	3	2	10	3	4	0	2·18	1·60	1·43
1905	3	19	10	3	0	10	3	1	9	2·09	1·55	1·39
1906	3	19	9	3	2	10	3	3	1	2·10	1·60	1·40
1907	3	19	0	3	3	10	3	3	1	2·10	1·60	1·40

countries. In England and Scotland the maximum consumption was reached in the years 1899-1901, the last three years of that quinquennium, but in Ireland the maximum for the decade was not reached until the year 1903.

In the second quinquennium 1902-1906 the consumption of alcohol in England and Scotland diminished, the minimum being reached in 1905. While in England and Scotland the figures show that the consumption of alcohol is smaller in the last two years of the decade than ever before, in Ireland on the other hand the consumption of alcohol has increased and is now greater than it was ten years ago.

It is interesting to note that in Great Britain the maximum was reached during the time of the Boer War, the Mafeeking and other similar celebrations so common in all parts of England had much to do with this increased consumption of alcohol. I was reminded then of what I saw in Paris at the outbreak of the Franco-Prussian War in the year 1870, where the war frenzy and enthusiasm of the young French soldiers and their citizen friends caused the unusual scenes of drunkenness which the boulevards of the French capital presented at that interesting time.

The usual factor, however, in increasing the consumption of alcohol is a wave of commercial prosperity, during which the working classes enjoy good wages and regular employment. The drink bill of the nation rises and falls with cycles of trade prosperity and trade depression. In Ireland the striking increase in consumption of alcohol shown by the table may be due to many causes, but the chief factor in Ireland as elsewhere must be regular employment and good wages. For the past six years Ireland, per head of the population, has consumed more alcohol than Scotland. This increase is almost entirely due to an increased consumption of beer. I show you now a comparative table of the beer consumption in the three Kingdoms for the decade 1897-1906. This table was compiled from the Inland Revenue Returns. The method of computation was that used by Dr Dawson Burns in his annual review entitled "The National Drink Bill." It is only an approximate estimate, but it is sufficiently accurate for the purposes of comparison.

During the maximum period of alcoholic consumption, 1899-1901, the beer consumed was in the following proportion: England 36 gallons per head of the population, Scotland 12 gallons, and Ireland 18½ gallons. This amount has diminished year by year since 1901 in England and Scotland. In 1906 the last year of the decade the proportion was 31·4 in England, 9·5 in Scotland, and 21 in Ireland. So that in 1906 for every pint of beer which the Scotsman drank the Englishman drank 3⅓ pints and the Irishman 2⅕ pints.

TABLE II.—*Consumption of Alcoholic Liquors per Head of the Population in 1907.*

	ENGLAND.	IRELAND.	SCOTLAND.
Total Spirits, (Gallons)	·8	1·0	1·6
Beer, (Gallons)	30·6	21·0	9·2
Wine, (Gallons)	·3	·1	·3
Other Liquors, (Gallons)	·4	·1	·1
Estimated Total of Alcohol in above, (Gallons)	2·1	1·6	1·4
Expenditure, (per head)	£3 19 0	£3 3 10	£3 3 1

With regard to spirits, British and Foreign (chiefly whisky), at the beginning of the period the Englishman drank ·92 gallons per head of the population, the Scotsman 1·78 gallons, and the Irishman 1 gallon. At the end of the period the total spirits consumed by the Englishman was ·8 per head, by the Scotsman 1·6, and the Irishman 1·0 gallons. Thus while in England and Scotland the amount has diminished by a tenth of a gallon in Ireland it remains exactly as it was in the beginning of the decade. Putting it in proportion, for every one glass of whisky the Englishman drank the Scotsman drank two glasses and the Irishman one and one-fifth. The proportion of alcohol in one glass of whisky is about one ounce, and the proportion of alcohol in one imperial pint of beer is about one ounce. It is therefore in the comparatively large amounts of beer consumed in England and Ireland that the total consumption of alcohol is increased to a larger amount per head of the population in these countries as compared with the smaller amount estimated for Scotland.

TABLE III.—*Gallons of Beer per Head of the Population.*

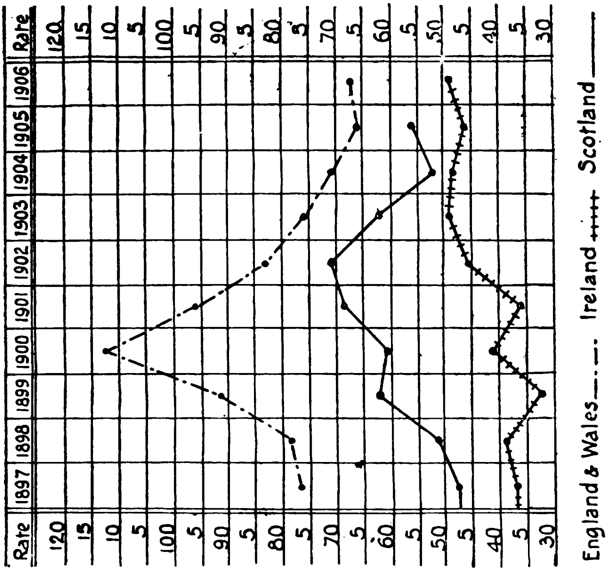
	ENGLAND.	IRELAND.	SCOTLAND.
1897-1901	35·4	18·4	12·0
1902-1906	32·7	20·2	9·7
1907	30·6	21·0	9·2

The estimation of the amount of disease caused by the abuse of alcohol in the three countries is more difficult, because the diseases caused by alcoholic excess in such organs as the brain, the heart, and the kidneys, although known to be very numerous are exactly similar to diseases which arise from other causes. It has therefore been found impossible to differentiate the deaths from these diseases in the Registrar-General's Returns, in such a way as to indicate the deaths from diseases set up in these organs by alcoholic excess. Several comparative standards for the alcoholic death-rate have been suggested. Dr Farr, in his appendix to the Registrar-General's Report for 1871, refers to the fall in deaths from alcoholism and delirium tremens as being evidence of the decrease of the bad habit of drunkenness in England at that time. Dr Wm. Ogle, who followed Dr Farr as medical statistician to the Registrar-General of England, stated in his supplement of 1895 that in his opinion the most trustworthy index of the prevalence of alcoholic excess was "the ratio of deaths from diseases of the liver and ascites, and particularly deaths from cirrhosis of the liver, one of the commonest consequences of alcoholic excess." The present medical statistician to the Registrar-General of England, Dr John Tatham, in his latest analysis of causes of death in England and Wales, published in December last, writing of alcoholism states that "in existing circumstances, probably the best available indication of the extent to which this particular form of intemperance prevails in England and Wales is still afforded by fluctuations in the combined mortality from alcoholism and cirrhosis of the liver." Following the example of these high authorities I shall now take the mortality from alcoholism (including delirium tremens) and from cirrhosis of the liver as a standard to test the comparative results in the death-rate of the increased consumption of alcohol in England and Scotland from 1897-1901, and the subsequent diminution in the quinquennium 1902-1906, as compared with the steady increase in the drink habit of Ireland throughout the whole decade.

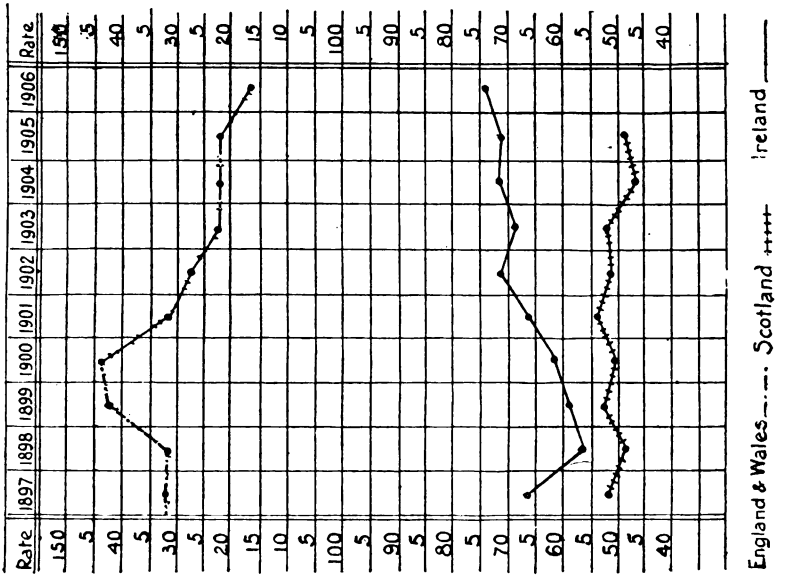
I have drawn up a table giving the exact figures extracted from the Registrar General's returns for the three countries, but I shall

Death-rates per Million of Population from Alcoholism and Delirium Tremens, and from Cirrhosis of the Liver.

	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	Average
ENGLAND AND WALES—											
Alcoholism,	77	79	90	113	96	84	76	70	65	66	82
Cirrhosis of Liver, -	133	132	143	144	132	123	117	117	117	112	127
	210	211	233	257	228	207	193	187	182	178	209
	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	Average
IRELAND—											
Alcoholism,	37	39	33	41	36	45	49	48	43	48	42
Cirrhosis of Liver, -	67	57	59	62	67	71	69	72	71	74	67
	104	96	92	103	103	116	118	120	114	122	109
	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	Average
SCOTLAND—											
Alcoholism,	48	50	63	60	69	70	63	53	56	...	59
Cirrhosis or Liver, -	51	48	53	50	54	52	53	47	49	...	51
	99	98	116	110	123	122	116	100	105	...	110



Alcoholism.— Death Rates per Million. Including Delirium Tremens.



Cirrhosis of the Liver. Death Rates per Million

be able to demonstrate the facts more clearly on the graphic chart which I now show you. In England and Scotland the lines of the chart show a rise in mortality coincident with the rise in alcoholic consumption between 1899-1901, and a fall in mortality coincident with the fall in the consumption of alcohol in these two countries from 1902-1906. In Ireland, on the other hand, the rise in mortality while it begins in 1900 reaches the maximum in 1903, thus corresponding with the date of the maximum consumption of alcohol in Ireland already demonstrated. There is a slight fall in the mortality in Ireland in 1905, but it immediately rises again in 1906 nearly to the level of 1903. This record is strong confirmation of the accuracy of the figures already given you as to comparative consumption of alcohol in the three countries and their comparative amounts.

Dr Farr's standard. Judged by his standard you will notice that, during the whole of the decennium, England shows a higher death-rate than Scotland. But in Ireland the death-rate is lower than that of the sister countries.

Dr Tatham's standard. Taking now cirrhosis of the liver as a standard the figures of my table are still more remarkable. The death-rate in England and Ireland is enormously greater than that of Scotland from this disease. In England the rate increased between 1899-1901. Since 1901 it has fallen in England and Scotland, whereas in Ireland it has been steadily rising.[1] This higher death-rate from cirrhosis of the liver in England and Ireland as compared with Scotland, out of all proportion as it is to the actual amount of alcohol consumed, demands an explanation. This disparity in the death rate from cirrhosis of the liver is still more striking if we compare the death rates for this disease in Glasgow and in London. I now shew you comparative death rates for these cities.[2]

After a careful study of the subject in its medical aspects I have formed the opinion that where alcoholic excess takes the form of beer drinking, *i.e.*, as in England and Ireland, cirrhosis of the liver is the common result, because the comparatively weak alcoholic stream carried to the liver produces irritation of the liver cells, and prolonged irritation leads to cirrhosis. Whereas, in Scotland, alcoholic excess in a more concentrated form of alcoholic beverage leads more frequently to fatty degeneration of

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[1] See Table, page 172. [2] See Table, page 174.

Deaths and Death-rates per Million from Alcoholism and Delirium Tremens, and from Cirrhosis of the Liver.

GLASGOW.	Alcoholism and Delirium Tremens.		Cirrhosis of Liver.	
	No.	Rate.	No.	Rate.
1897, - - -	35	49	29	41
1898, - - -	52	72	32	44
1899, - - -	63	85	24	32
1900, - - -	51	68	36	48
1901, - -	67	88	41	54
1902, - - -	64	83	34	44
1903, - - -	59	75	33	42
1904, - - -	37	46	31	39
1905, - - -	60	74	50	62

LONDON.	Alcoholism, etc.		Cirrhosis of Liver.	
	No.	Rate.	No.	Rate.
1897, - - -	635	142	769	172
1898, - - -	655	145	749	166
1899, - - -	787	173	883	194
1900, - - -	847	188	853	189
1901, - - -	735	162	737	162
1902, - - -	699	153	716	156
1903, - - -	653	142	665	144
1904, - - -	596	128	689	148
1905, - - -	547	116	730	155
1906, - - -	547	116	730	155

the liver. I have so frequently seen this enlarged fatty condition of the liver in persons who have died from whisky drinking, that I believe it to be more characteristic of the whisky drinker than cirrhosis of the liver is. In this connection I shall narrate a case which came under my notice in the Victoria Infirmary a short time ago.

J. E. was admitted to the Victoria Infirmary suffering from alcoholic neuritis. His occupation had brought him into contact with publicans and distilleries. For ten years he had been in the habit of taking from 7 to 10 glasses of whisky daily, also beer and stout occasionally. Three days after his admission to the hospital he died with symptoms of congestion of the brain. On post-mortem examination his liver was found to present well-marked appearances of advanced fatty degeneration. His kidneys showed commencing fatty changes. Dr Anderson, the pathologist to the Victoria Infirmary, has found in his experience fatty degeneration of the liver much more common than cirrhosis of the liver in post-mortem examinations in Glasgow.

The reason for the frequent occurrence of degeneration of the liver in such cases is, that whisky habitually taken undiluted, and being carried directly by the bloodvessels to the liver, slowly, but surely poisons the liver cells. It brings about fatty degeneration of the liver tissue as certainly as any other strong poison, such as arsenic or phosphorus would do.

In Scotland cirrhosis is confined chiefly to tipplers, who, although they exceed habitually the physiological limits of tolerance, take their whisky more or less diluted with water.

I do not, therefore, think the death-rate from cirrhosis a fair standard from which to form a comparative estimate of the evil results of beer drinking as contrasted with whisky drinking. In the comparison it gives too great an advantage to Scotland.

By taking, however, the total death-rate from all liver diseases as the standard we get rid of this difficulty.

By every standard that has been suggested we have now compared these death-rates from alcoholic diseases, and by every standard Scotland, which is lowest in the consumption of alcoholic beverages, is found to suffer least from the evil results of intemperance. Judging by the same standards the death rates from alcoholic excess are much greater in London than they are in Glasgow.

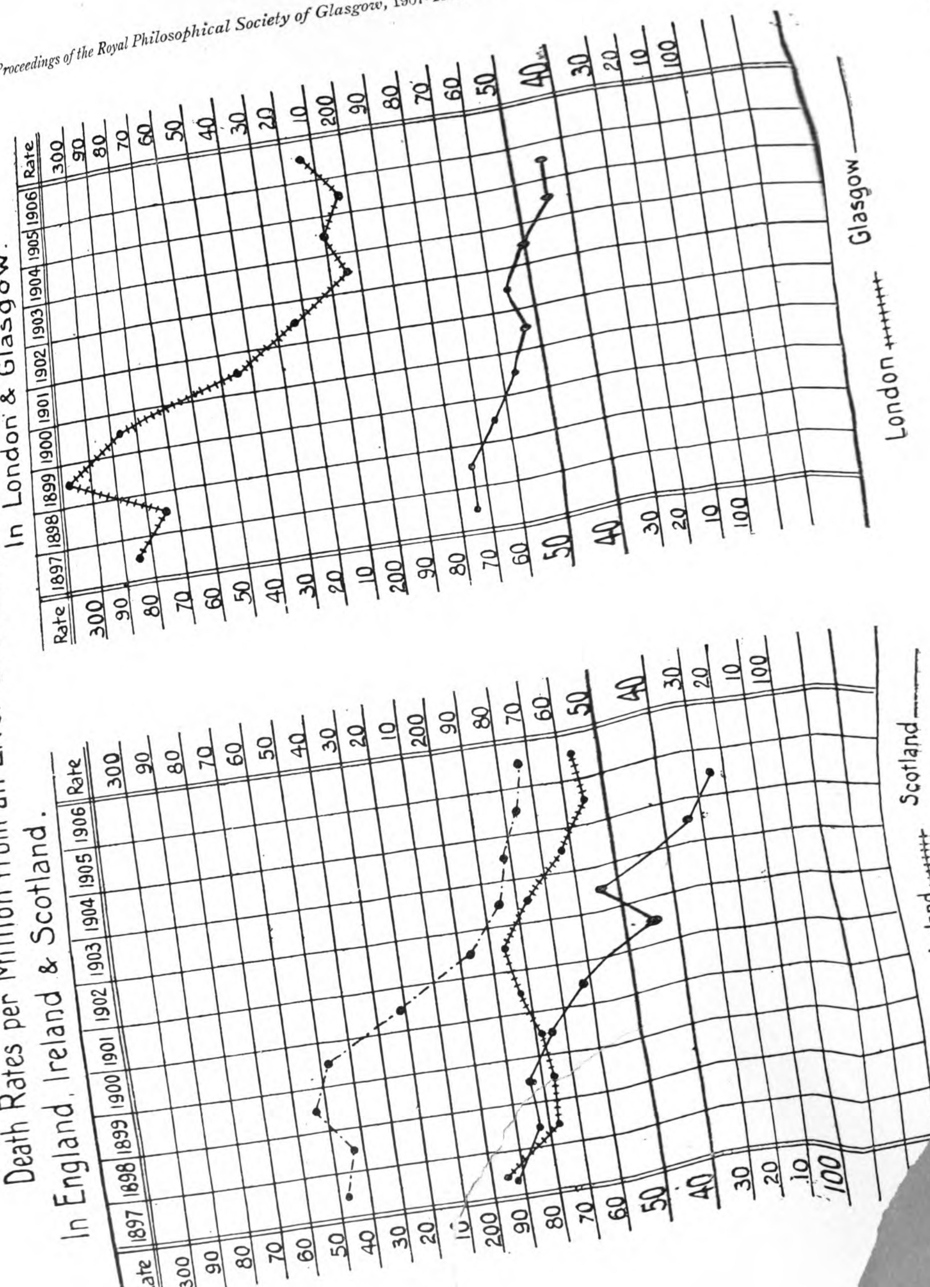
With these tables of the statistics of drink consumption and comparative death rates before us, we are compelled to come to the following conclusions. First, that less alcohol per head of the population is consumed in Scotland as compared with England

Death-rates per Million living from Gallstones, Cirrhosis of Liver, and other diseases of Liver and Gall Bladder.

Year.	ENGLAND & WALES.	SCOTLAND.	IRELAND.	LONDON.	GLASGOW.
1897	248	191	194	285	175
1898	244	183	179	274	174
1899	252	182	177	309	166
1900	249	177	179	286	159
1901	220	161	182	248	152
1902	198	145	187	224	156
1903	186	153	179	203	150
1904	181	135	162	210	148
1905	178	125	155	204	147
1906	174	—	158	214	—

and Ireland, and in consequence there has been less intemperance in the use of alcoholic beverages in Scotland during the past ten years. Secondly, that the amount of intemperance is much greater in London than it is in Glasgow, and that for the past two or three years there has been some diminution in both cities. Thirdly, there is clear evidence that, in proportion to population, more disease and more deaths have been caused by the excessive use of beer among the people of England and of Ireland than by the excessive use of whisky in Scotland. For this reason I am strongly of opinion that beer drinking should not be encouraged as a remedy for, or an antidote to, the evils of spirit drinking. It is high time that in England and Ireland the current opinion so prevalent in these countries that beer is a necessary and harmless beverage should be vigorously combated, and the great evils which arise from its immoderate use should be widely published.

Brewers are now in the habit of adding chemically prepared glucose and other adjuvants to improve the appearance and the taste of this beverage. The dangers from these chemical additions were recently exemplified in Manchester. It may well be that these new methods of doctoring beer are responsible for some of



Death Rates per Million from all Liver Diseases, including Cirrhosis

In England, Ireland & Scotland.

In London & Glasgow.

its deleterious effects, but in my opinion the chief danger is the alcohol which it contains. It has been said that much of the increase in diseases of the liver in England is due to the excessive use of animal food in England, and that more disease is due to excessive eating than to excessive drinking. But nobody accuses the Irishman of gluttony or of the abuse of animal food, and yet the death-rate from cirrhosis of the liver in Ireland has increased during the past five years, and this increased death-rate is not only coincident with, but in proportion to, the increase in the consumption of malt liquors. Stout and porter are I believe largely used in some parts of Ireland, and make up a considerable percentage of the beer consumption. The statistics of death-rates appear to prove that their intemperate use is as dangerous as the excessive use of any other form of alcoholic beverage, if not more so.

Of all the cities in the kingdom Glasgow has been most frequently held up as the awful example of open drunkenness in its streets. Nevertheless I am convinced that the improvement which has been steadily going on in Scotland generally has been equally well marked in Glasgow.

What then is the reason that we see so much open drunkenness in Scotland, and that convictions for drunkenness are, proportionately to population, greater in Glasgow than in London.

I think the reason may be found in the different habits of the drunkards in the two countries.

In Scotland the whisky drinkers of the lower orders live in crowded tenements of houses and so are concentrated in comparatively small areas. In the early stages of intoxication the whisky drinkers are violent and combative and require restraint, they take their liquor in the public-houses where they are under the public eye. On the other hand the beer drinkers take a large part of their liquor at home where they are not in the public eye. Their beer contains a narcotic principle lupuline which taken in excess adds rapidly to the stupifying influence of the alcohol. They are not so much violent maniacs as stupid sots, so that they require assistance more than restraint, and do not become a danger so much to their neighbours as to themselves. For these reasons they are not brought before the police courts so frequently in proportion to their numbers as the whisky drinkers are. The number of police court convictions for drunkenness is therefore no proper standard by which to estimate the prevalence and extent of drunkenness among the beer drinkers of England as contrasted with the whisky drinkers of Scotland.

For some time I have been making careful enquiries into the drink habits of the male hospital patients that are placed under my charge. They are all, with rare exceptions, of the class of labourers and artisans. In every case I have endeavoured to ascertain the particular kind of alcoholic beverage used by these men, and the daily average quantity taken. Taking Dr Parkes' standard 1½ ounces of absolute alcohol, which is equal to two glasses of whisky or a pint and a half of beer per day as the maximum limit of moderate indulgence, I find that out of 316 men, 176 or 56 per cent. are moderate drinkers, the bulk of them only admitting to two or three glasses of beer or whisky in the week. 74 or 23.4 per cent. exceed the limit of moderation, but many of these are not drunkards in the sense of getting frequently drunk. They are constant tipplers. The real drunkards constitute the minority, but they multiply themselves fifty fold by getting drunk and being run in by the police every Saturday night, as long as they can get enough of money to buy the whisky. The remaining 66 or 20 per cent. are teetotalers of at least three years standing, some of these were at an earlier period of their life heavy drinkers.

As the wreckage from the drunken section of the working classes generally drifts, sooner or later, into the hospitals the percentage of drunkards among hospital patients must be much greater than it is in the general community of workers. I am convinced, not only by such statistical facts as I have brought before you to-night, but also by enquiries in other directions that at the present day the masses of the people of Scotland are sober and temperate in their habits. Scotsmen should no longer submit to misrepresentation in this respect, and Scotland must no longer be held up as the awful example. It is from ignorance of the facts that such men as Mr John Gretton, M.P., makes the statement that early closing and Sunday closing and other temperance remedies have failed to lessen drunkenness in Scotland, and that it is the failure of these remedies which is largely responsible for what he ignorantly terms the backward progress in Scotland. I am certain that Sunday closing and early closing have been successful measures, and I would advocate further restrictive measures of a similar kind.

I think it would be beneficial to curtail the open hours of the public-houses still further. There are many other ways in which improvements might be effected, but to-night I shall only mention one as an example.

I would advocate the closing of public-houses on Saturday afternoons between the hours of twelve and four. Such a measure would be beneficial in preventing the men who have just received their wages from flocking into the public-houses in the vicinity of their workshops and drinking raw spirits on an empty stomach. This is a very common practice. The habitual topers begin their Saturday's carouse in this way, and before the afternoon is well advanced they become a public nuisance in the streets of the city.

It is in the national interest that the wives and families of such men should be protected from the starvation and misery which this Saturday debauch entails. If these men were permitted to go home with their earnings intact in their pockets, and properly fed before they had an opportunity of getting into a public-house, they would be less drunken, their wives and families would be better fed and clothed and housed, and their children would have a better chance of growing into healthy able-bodied citizens.

In conclusion I may say that I think we are greatly indebted to the members of the temperance societies of Scotland, who have been the means of so educating public opinion as to render possible those measures of temperance legislation which have at last placed Scotland in the honourable position of being in respect to alcoholic consumption the most temperate part of the United Kingdom.

Germinal Vitality: a Study of the Growth of Nations as an Instance of a hitherto undescribed Factor in Evolution. By JOHN BROWNLEE, M.D., D.Sc.

[Read before the Society, 29th April, 1908.]

DURING recent years a phenomenon which has been attracting increasing attention is the decline of the birth rate. This has been observed not only in England and Scotland but also in most of the chief countries in Europe. It has been explained on the ground that a high civilisation is incompatible with a high birth rate, and it has been pointed out that among the better classes the size of the family is, in all civilisations, smaller than among the artisan or working classes. This cause has, however, been recognised as in itself insufficient, and it has been the habit in recent years to lay part of the blame of the falling birth rate on the definite intention of many parents to limit the size of their families. Now it has for a long time seemed to me that the statistics which are used to prove this, refer to much too short a period of time to permit any certain conclusions being drawn. In only one European country—Sweden—is there any accurate record of the population and the corresponding birth and death rates for a century and a half, and in Britain we have only eighty years of statistics on which to build. Neither period, as I shall show in this paper, is sufficiently long to warrant any dogmatism regarding the present conditions. Before it can be said that any phenomenon regarding man is exceptional an inquiry into the manner in which the populations of different countries have varied for at least five or six centuries must be made. Some life cycles are known to occupy years before they are completed. This has been noticed in the recurrence and disappearance of epidemics and if such epidemics as scarlet fever, where the life history of the organism occupies only a short period, recur at intervals measured by years, it would not be surprising if it were found that an animal which has a life history occupying years, required centuries of observation before all the different variations of its normal processes were ascertained. That there should be some periodicity displayed would not be at all surprising. It is a general characteristic of life in all its forms and phases. In this paper, then, I shall in the first place state the facts relating to periodicity of growth in the body or somatic plasm, and examine the consequences if similar laws hold with regard to the germinal plasm. I shall then further show how far this theoretical argument is in accord with the facts. The actual process by which the theory was arrived at was the reverse of this, but once formed the theory was found to have so wide an application that it seems better to state the conclusions clearly first, and then show how the facts group themselves together in their support.

In the first place, if we consider the growth of any of the higher forms of life we find that growth is not continuous. For instance, in all animals which possess an exo-skeleton such as crabs, lobsters, or other arthropoda, there is a period of very rapid growth after they have shed their external coverings and before the new shell or skin has attained sufficient hardness to prevent further increase of size. During this period energy previously stored up is liberated in the form of cell proliferation and again there follows a period in which such energy is stored up. In these cases, environment and food supply may play an important part in determining the frequency of the period of change from one state to the other, but the rhythm remains. It is also well known that growth in higher species is not uniform. For instance, a child often adds some inches to its stature in a comparatively short time and this is followed by a period in which little or no growth occurs. Now it is commonly assumed that growth is very closely related to food supply and environment, but this is only partly the case. In the case of man specially environment and food supply are subject to less variation than among the beasts, so that as regards the growth of children, at least, it cannot be alleged that such causes by any means completely account for the phenomenon observed. The question may therefore be asked: If such rhythm apply to the somatic cells may it not also apply to the germinal plasm? In this case we would find the latter having periods of liberation of energy followed by periods during which a new supply of energy would be reaccumulated. The former would be represented by periods of increase of a species, the latter by periods of rest with stationary or nearly stationary numbers. This analogy if pushed further suggests other points. As somatic growth in any individual case obeys no general law, neither by analogy can the periods when energy is stored up in the germinal plasm be expected to show uniformity. To say, for instance, that any period of energy should last a certain time would be quite impossible. But on the other hand it might be expected that each kind of variation in somatic growth would be represented by a corresponding phenomenon in germinal growth.

Of somatic growth the varieties seem to be the following:—

In the first place, moderately uniform growth may be postulated as one variety. It is certainly one, but as certainly not the only one.

Secondly, as already mentioned, there is that form of growth in which periods of increase of size are followed by periods when the organism seems to increase little, but in which some process takes place which is preparatory to the next period of increase. This can be observed independently of seasonal conditions, environment, and food supply. It is probably the commonest form of growth. As already stated it applies to all forms with an exo-skeleton and also as far as is known to many of the higher forms. It can also be observed to have botanical analogies though here seasonal conditions play so large a part that their influence can only exceptionally be excluded. In the growth of trees, for instance, we have the well known arrangement of rings in the main part of the trunk, an arrangement by which the age of the tree can roughly be estimated. These rings usually represent one season's growth, but under certain conditions two rings may be formed in one favourable season showing a rhythm of growth independent of environment, in the sense that a very favourable season does not express itself by the formation of one very large ring, but by two of the more normal size.

In the third form of growth there is an exaggeration of what occurs in the preceding group. Everyone is aware of examples of specially rapid growth at some period of childhood. In such cases, an individual may develope in a few years so great an increase of stature as to nearly attain full adult size. On the other hand, many persons who in their sixteenth or seventeenth years were of such small height as to be almost dwarfs relatively to those of like age, yet attain in the years of early manhood more than the average stature of their family. In the latter case, we have apparently a long period of storage of energy which in the end is set free with a startling suddenness. The same form is also suggested when a rose bush suddenly throws out from an old branch a new shoot which grows many feet in a few weeks. Here, again, it is clear that the somatic cells have acquired in some way a great reserve of energy expressed in the sudden burst of growth. As a side issue, it is to be noted that the rapid growth in these cases is often followed by a period of weakness as if the accumulated energy had been more than exhausted, and the maintainance of existence then demanded a further period of rest to recover even the average vitality. This condition has a germinal analogy which will be shown later on. It is to be noted, here, that the immediate cause of these periods of increase of growth is not to be sought in the direction of food supply, for a stimulus of the opposite kind not infrequently liberates the explosion. It is a well known fact that some children after an attack of a specific fever have a period of very rapid growth. In the Glasgow Fever Hospital a child after an attack of scarlet fever has been observed to grow as much as two and-a-half inches during a period of eight weeks.

Lastly, there are the forms of aberrancy of somatic growth, (*a*) those which express themselves in such forms as giants and dwarfs, and (*b*) those where the somatic energy does not seem sufficient to permit of growth at all. This is, apparently, the cause of one form of early death among the new born.

The analogies in the germinal plasm, that is, in the life of a species, may now be discussed.

With regard to the first type, *i.e.*, uniform growth the analogy in the germinal plasm demands that the species would tend to constantly increase, maintain itself or diminish at a definite rate according to the environment being suitable or the reverse.

By analogy with the second type, periods of energy of a species would alternate with periods of depression shown in the former case by increase in numbers or in vigour more or less independent of the immediate environment, and in the latter case by the environment acting more powerfully on the species.

Corresponding to the third of our types a species might burst into sudden prominence, and become one of wide distribution but only maintain itself thereafter.

Corresponding to the aberrances mentioned in the fourth group a species might lack productive energy, and consequently represent in numbers a dwarf, a condition fulfilled by many forms at the present day such as some orchids or the less common birds of paradise. On the other hand, if a new species contained the formative nisus tending to gigantism, it might rapidly cover the earth and as rapidly disappear. In the last case of all, that corresponding to lack of somatic energy, new species might appear, but lacking all power of reproductive energy die out at once.

The evidence that such analogies are not merely theoretical will now be detailed. It is abundant but rarely at all complete, and it is convincing more by cumulative effect than by direct proof in any individual instance. In the first place man will be specially considered. Human history goes back for more than four thousand years with comparative fullness. Though this is chiefly and even almost wholly concerned with the civil and political, religious and artistic endeavours of man, yet it cannot be read without throwing much light on the conditions which underlie these manifestations. Many attempts have been made by writers on the philosophy of history to elucidate the underlying spirit made evident by these activities, but the biological basis of racial adventure has not been so much discussed, though this can also be discovered if sufficient attention is directed to the proper signs. The evidence is more complete than might be expected, and as far as can be seen is wholly in favour of a rhythmic change in the life history of man.

It is a commonplace in history that nations have a beginning, rise to greatness and then decline. The rise of Athens to the first place in Greece and its return into the position of a second rate state is one of the most notable examples. The great burst of energy which produced in one generation poets, philosophers, sculptors and statesmen, unequalled since in the same period of time, is an extreme instance of germinal fitness, and though the result of the great advance was to raise the Greek to a level of intellectual dominance for many centuries, yet never again did Athens show herself possessed of any great creative or ruling energy. This kind of example is, however, rather exceptional. Rome may be more naturally taken as the type of empire to which all more or less conform. Here, from the time of the founding of the City till that of the Cæsars, we have the alternation of energy and lassitude which should be expected if the thesis of this paper is found substantiated. The history of the Republic is not the history of undisturbed victory. There were long periods during which the intellectual and moral energies of the people were at a low ebb, and even the last great period of Republican glory stands midway between the intellectual deadness which characterised the regime of Sulla and Marius, and the like inertness which permitted the foundation of the empire. None of the nations of antiquity, hovever, afford evidence sufficiently exact to establish the hypothesis. For that we must turn to modern Europe where there are several countries, especially England, Spain and France, by which the growth of a nation can be thoroughly examined.

With regard to England, in the first place, sufficient estimates of the population at different dates have been made to determine the rate of progress of the population since the date of the Domesday Book. But even before that point when statistical history begins we are not without some guidance. It is found that each period of English energy, since the Conquest, is associated with a corresponding increase of the population, and if like hold from the period of the Saxon invasion then, up till the present time, there have been five waves of expansion, with four intervening periods in which there was no national response to the intellectual action of the few great men who lived or ruled during these times of depression. It will, I think, make the further argument more easy to follow if this is somewhat fully illustrated. The first period of energy then is represented by the invasion of the Angles and the Saxons from 450 A.D. till 550 A.D. The fruits of this period were seen in the Conquest of the Britons. After this, while the settling of the country was in progress, the latter again were able to re conquer some portion of their lands, but not for long. The Saxons regained their energy, and we have the period of the foundation of the kingdom of Wessex 650-800 A.D., representing another crest in the wave of Saxon expansion. Again the forces of external stress found the period of Saxon energy on the wane, and from end to end of the island Danish pirates ravaged the land, and after the death of Alfred even established a royal dynasty. It is interesting to note that this period of depression lasted for several centuries. There was nothing to indicate that the English nation had any future. The Conqueror swept over

England with great ease, a proceeding impossible had the manhood of the nation been as in the times of Ine or Egbert. Even when one of the most able kings of modern Europe, Henry Plantagenet, came to the throne he could accomplish nothing in the way of welding his subjects into a nation. That had to wait for another century when, in the reigns of the Edwards, we again meet the English nation in a heroic state. Here for the first time the statistical side of English history comes on to firm ground. Estimates of the population of a fairly definite character can now be made, and from this point there is general agreement as to the facts. The special movement of the population during the end of the thirteenth and the beginning of the fourteenth centuries will be discussed later, but it may be noted that, in 1377, the population of England is estimated at 2,235,000. From this period till about the end of the reign of Henry VII. there was little or no increase. It is true that this was a period of civil war, but that in itself is not a sufficient reason as in other instances to be described later, war has made little difference on the increase of the population if the germinal energy was at a high level. During the reigns of Henry VIII., Edward VI., Mary, and Elizabeth the population doubled itself. Of this apart from the estimates made on the usual basis there are some other indications which have been interpreted otherwise by historians. We hear of distress in England attributed to the destruction of the monasteries. Now it is likely that here and there much distress was due to this cause but the influence of the monasteries has always been exaggerated, and it is much more likely that the distress was due to a population increasing beyond the means of support at the moment. A stationary population can hardly begin to increase rapidly without some inconvenience arising in the food supply. With the accession of James I. the increase in the population seems to have come to an end, and from that date till the end of the first half of the eighteenth century the population of the country was stationary, even in the earlier years of that century falling somewhat back. Again, about 1760, the last wave of increase began, and from that date till the present time the number of the people has steadily increased. Now it may be noted that each of these periods of increase has lasted roughly a century more or less. The periods correspond ing to the reigns of the Edwards and the Tudors apparently ended without any human cause in the shape of war, or famine, to determine their close and, in consequence, a like phenomenon might be expected to occur in the last case also. This, I think is the case, but certain factors have interfered to prevent its presence being easily seen. These are the improved sources of food supply and the progress of sanitary science. Thus, though the birth rate has steadily fallen since 1870, the fall in the death rate, due to the causes mentioned, has permitted the population to go on increasing long after the wave of germinal energy has expended itself.

The data on which this short resume has been based will now be given seriatim with short discussions of doubtful points, and with a note of the authorities from which the evidence is taken. About 1086 A.D., or 20 years after the Conquest, the population has been estimated by the figures given in the Domesday Book. Unfortunately these figures are not regarded as complete, so that the population at this period is not definitely known. It is variously estimated at from 1,500,000 to 2,000,000. For the purpose of this paper the exact figure is not of great importance, as the population in England at the accession of Edward I. can hardly have exceeded the latter figure, so that, even if the former be more nearly correct, the increase is only 33 per cent. in a couple of centuries and particularly negligible. The next date at which the population of England can be accurately estimated is 1377. It is given commonly at 2,235,000; at this period there is general agreement,[1] but for the rest of the century there is some diversity of opinion. The two definite facts are apparently that a third to half of the population perished in the years 1348 and 1349; and that in 1348, according to Professor Thorold Rogers, the amount of cultivated land in England was not sufficient to support many more persons than two and a half millions. The contemporary writers also remark that, after the Black Death, marriages were singularly fertile, and that the mortality due to the pestilence was quickly made good. It is not clear how far this could be a temporary phenomenon. I think it much more likely that one of the waves of increase was in process for some time prior to the onset of the plague, but was not specially noticed. The Black Death was not the only cause of the failure of the wave of increase to show itself. There were great famines from 1315 till 1321, and at other times to a lesser degree in the same century.[1] In the years succeeding the great epidemic of plague in 1348-49, there were several lesser epidemics. If it is granted that there was a wave of increase on at the time, the difficulty of reconciling the different figures can greatly be lessened. Taking 2,235,000 as the population in 1377; allowing that the population was increasing so as to double itself in seventy years, a quite reasonable supposition in view of the fact that the number of persons living in England doubled itself in the first fifty years of the nineteenth century, an estimate for the year 1348 may be made as 1,678,000. Doubling this we have 3,356,000 as the population living in the year 1347, a number not greatly in excess of that allowed for by the amount of cultivated land. Making it only half as much again on the assumption that only one third of the population perished the figure is 2,517,000. Probably the truth lies between the two figures. Assuming this, and that the population in 1347 was 2,936,000, and that the same rate of increase obtained prior to this date the population of 1321 may be put at 2,270,000. What the number should be placed at prior to the great famine is doubtful, but probably not many more. The conditions of the first fifteen years of the nineteenth century approximated more closely to the condition of famine, according to Professor Thorold Rogers, than any period since that date, and yet the increase of the population in these years was more than ten per cent. Placing it, however, at 2,500,000, and again allowing the same rate of increase we would have, in the year 1290, a population in England of about 1,932,000, a figure not much different from that just mentioned as probable at the accession of Edward I. This argument is, of course, very largely hypothetical, and the estimates given worth very little individually. The points of interest are that, undoubtedly, there was a century of great fertility, and that assumption of this reconciles a number of figures obtained from various sources, and explains how the population was more than maintained during a century of great calamities. From this period the population was practically stationary till the beginning of the reign of Henry VII. Traill[2] estimates it at that time at two and a half millions; at the death of Henry VIII. at four millions;[3]

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[1] Gasquet, "The Black Death," 2nd Ed., p. 225.

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[1] Thorold Rogers, "Six Centuries of Work and Wages," p. 62.

[2] Social History of England. Vol. iii. p. 127.

[3] Ibid.

and in the time of James I. at five millions.[1] This seems a reasonable conclusion in view of the fact that Sir Walter Raleigh's census of the fighting men in England in the year 1575 makes their number 1,175,000. This census was not complete, but assuming that the fighting men were those aged from 15 to 60 years of age they can hardly have numbered much more than a fourth of the total so that, at this date, the population of England seems certainly more than four millions. This means, that between 1500 and 1600, the population doubled itself, a considerable in crease when we consider that famines were severe during this century. Professor Thorold Rogers, however, agreeing that the population in Henry VII.'s reign was two and a half millions, does not admit of any increase during this century. How he arrives at this conclusion he does not state, though it is in contradiction to most of the other authorities. He also states that, during the seventeenth century, the population doubled itself, reaching over 5,000,000 by the end of that period. Even with these estimates, however, the period of increase is simply changed from one century to another, and the main argument of this paper stands unaffected. From 1700, however, we have a series of estimates from different sources all more or less concordant. These figures, calculated by Finlaison in the *Treasury*, may be taken as probably accurate. It is to be noted that, in the early years of the eighteenth century, the population of England actually went back for a time without there being any special reason for the change. It is also to be noted that in the first fifty years of the century the increase of the population was very slow, and that not until 1760 did a marked increase occur. From 1801 the census returns place the statistics beyond doubt.

It does not require much space to present all the information available about the population of Spain, but although this is the case it may be noted that the estimates of the population are nearly all census figures and therefore specially valuable. It is also to be noted that these census returns refer to dates which might have been specially chosen to give the information desired for the present discussion. The first figures refer to the period circa 1500. At this date unfortunately no census is available. The population is, however, estimated at 4,250,000 by Zimmerman.[1] From this point till 1594[2] there is no estimate. At that date a census was taken which referred to about six-sevenths of the country, so that when due allowance is made the numbers of inhabitants can be taken very approximately at 8,207,000, which shows that the population doubled itself during the century, an increase in amount paralleled often elsewhere. From this point, the period at which Spain began to occupy a less important place in European affairs, the population seems to have become almost constant till the middle of the eighteenth century. In 1768 a census was again taken when the population was found to be 9,160,000. In 1787 the population was 10,268,000, and later in 1797 10,541,000. Till 1857 there was no census, when the number of inhabitants was found to have increased to 15, 942,000. The period which is most interesting from the present point of view is that from 1500 till 1769. During the first century of this there was some emigration to the southern states of America. But this emigration was never so great as to inhibit the growth of the population. In 1546 it is estimated that there were only 15,000 Spaniards in America.[3] After this the regulations regarding emigration were very strict. No one could settle in the new world without a license, and this license was given only after inquiry, nor was emigration encouraged till the latter half of the eighteenth century. The number of native born Spaniards in South America in 1800 is estimated at only about 300,000,[4] and as the creoles were not more than twice as numerous at this period, it is clear that no emigration had occurred during the sixteenth and seventeenth centuries at all sufficient to account for the stationary character of the population in the home country.

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[1] Ibid. Vol. iv. p. 140.

The history of France affords examples of the same nature. The records of population are not so precise, but are yet sufficiently definite to show where both the periods of strong and weak germinal energy are to be placed. Thus before the plague of 1348[5] the population was probably over 19,000,000. This represented a time of germinal weakness, so that recovery in numbers did not immediately take place. Matters were made much worse by the continual condition of war which prevailed in the land. With the beginning of the fifteenth century, however, the English were driven from the country and the nation consolidated under Louis XI. What the population was during this time is not known. However it seems to have begun to increase at the end of the fifteenth century, and by the middle of the next century, that is about 1550, it had reached the numbers previously attained before the plague. A fall due in part to the religious wars and massacres marked this time, but these were not in themselves sufficient to account for the loss of population, and it is probable that it coincided with a period of germinal weakness. The end of the century again inaugurated a period of increase, and from 1590 to 1660 the population increased from under nineteen millions to over twenty-four millions. This synchronizes with the periods of French energy under Richelieu and Louis XIV. The Edict of Nantes was revoked in 1685. After this again we have a period associated with religious persecution, when the population went back, but the persecution was not sufficient in itself unless aided by germinal inefficiency. Vauban estimates the population in 1700 as 19,500,000. Quesnay goes so far as to state that in 1750 it had fallen to about 16,000,000. This is unlikely, but it is evident that a rapid increase took place just before the Revolution, an increase that extended into the nineteenth century and began to cease about 1830-40. Some very important facts must be noted about the history of the French population. At no time was there any rapid increase. Three times in history the population of England has doubled itself within a hundred years. This has never been the case with France. During the periods of germinal inefficiency in which the population in England and Spain merely remained constant, the population in France went back. War and religious persecution were undoubtedly factors, but though at the end of the sixteenth and seventeenth centuries conditions were bad in France, yet if the reproductive energy had been at all vigorous the population should easily have maintained its numbers.

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[1] Die Europaischen Kolonien, Berlin, 1896-9. Vol. i. p. 225.

[2] Journ. Royal Stat. Soc. Vol. xxiii. p. 147.

[3] Morris, "History of Colonisation." Vol. i. p. 246.

[4] Leroy-Beaulieu, "De la Colonisation chez le Peoples Moderne." T. i. p. 10.

[5] The figures for France are taken mainly from the "Histoire de la Population Française," par Lucien Schöne. Paris. 1893.

There is yet one important feature of the periods of activity not yet touched upon. It is in these periods that the creative genius of the country finds its best expression. Men of the first rank of ability are especially numerous, and those capable of carrying through, if not of initiating great movements, are also of more frequent occurrence. If we take England, we have seen that the first period of activity since the conquest roughly is comprised between the years 1290 and 1390. Within this time there were born the following:—Wyclyffe in 1324, Gower in 1325, Langland in 1332, and Chaucer in 1340. The next century is notoriously barren of literary names, and it is not again till the middle of the sixteenth century, that is of the next active period that we find a burst of literary activity. Thus Spencer was born in 1553, Bacon in 1561, Shakespeare and Marlowe in 1564, Jonson in 1574, Fletcher in 1576, and the last of the great creative poets, that is Milton, was born in 1608. After this the history of literature shows distinctively the well-known characteristic, namely that a creative age is followed by an age of criticism, and we find those just referred to succeeded by a series of critical writers, many of genius but lacking the fire of their predecessors, among whom Swift, Pope and Gibbon may be named. Even Fielding is less read to-day than many of his predecessors, though he has written at least one work almost in the front rank of genius. The next epoch runs from 1760 to 1870. Again this is marked by creative art. Wordsworth is born in 1770, Coleridge in 1772, Byron in 1788, Shelly in 1792, and Keats in 1795. The later writers become gradually more and more critical, and at the present moment we are passing again into the intellectual atmosphere of another eighteenth century. This cannot apparently be avoided. It is a symptom of the lack of the necessary nervous energy which makes men display that independence of trifles and intolerance of convention which characterize a creative age. In criticism of these remarks it might be said that only in certain ages do men become literary. At other times they do other things; but in answer it is evident that the early eighteenth century was prolific in authors, and that at the present time it can hardly be said that the attractions of authorship are slight. At no time did an original mind seem to have a better opportunity in literature than at present. It must also be noted that epochs of energy have displayed energy in many forms. Thus the age of the Edwards includes the birth dates of many noted soldiers and distinguished architects. The age of Elizabeth gave birth to

Raleigh, Drake, Howard, and many others, while science is memorably represented by Harvey. Likewise the latter part of the eighteenth century and the beginning of the nineteenth gave birth to Davy, Faraday and Darwin, Turner and Constable.

Comparing the great age of Spain, Cervantes was born in 1547, de Vega in 1562, Velasquez in 1599 and Calderon in 1600. The soldiers came earlier, Pizarro in 1476 and Cortes in 1485. The decline of Spain is of especial interest. It has been said that Cervantes killed the chivalry of Spain with a book, and that the regulations of Philip destroyed its commerce. These consequences seem to me to be *post hoc* rather than *propter hoc*, or, to be more definite, the result was only possible because the energy of the people was past its best for the time. We do not hear in history of an energetic people permitting its commerce to be destroyed by regulations. The Florentines did not allow the Pisans to prevent their development, and traders in England in the middle of last century made short work with a fiscal policy which hindered their pursuit of wealth.

In the case of France the same law is again seen to hold. The early sixteenth century is the birth time of Rabelais, Calvin and Montaigne. During the end of this century and at the beginning of the seventeenth there was a marked increase of the population, and this again is an epoch of energy. Descartes was born in 1596, Corneille in 1606, Molière in 1622, Pascal in 1623 and Racine in 1644. Succeeding this, literary genius is again represented by Voltaire, Diderot and Rousseau, and with the exception of the latter is critical in character. The next creative group corresponds to the epoch of increase coincident with the revolution, Béranger being born in 1780, Comte in 1798, Balzac in 1799 and Hugo in 1802.

I am aware that this reading of a theory into history is very dangerous and easily open to criticism, but I have tried as far as possible to limit the comment to the larger facts and not to press the issue too closely. A few such facts may be further noted. The Renaissance is said not to have reached England for a full century after it had pervaded the continent. But this is again the fallacy of *post hoc*. The Renaissance was the expression of wide intellectual and physical energy, and naturally could have little attraction to a race in the stage of physical inertness, but the moment the physical condition of the race became attuned to the new thought, that moment it found expression in England. In other matters there is a like application. The effect of pestilences and famines must clearly be looked for in relation to the physical state of a people. Thus the Black Death in 1348 little lessened the energies of England; Poitiers was fought in 1356, and the response of the people to the sovereign's policy was that of an energetic nation. On the other hand, the plague in Athens was the mark of the end of a period. The population had passed their period of increase, and recuperation was necessarily a slow and uncertain process. The decline of Athens was not so much due to the loss of actual numbers of those destroyed by the disease, as to the fact that already at the time of the plague the supply of capable individuals, who in general form the backbone of a governing people, had become deficient, for there is no reason to suppose that these were specially killed off by the disease. In the same way favourable conditions do not necessarily produce an increase in the population. As an example of this, England in the end of the fourteenth and in the beginning of the fifteenth centuries may be cited. At this time the wages of the peasant were higher than in almost any subsequent time, and yet after 1378 little or no increase of the population took place for more than a century. This subject is, however, much too large to discuss here beyond the suggestion of these few points.

Certain other points of great importance emerge when the periods of energy are more carefully examined. No fixed duration can be assigned to them. The periods of germinal lethargy, however, tend to be longer and of more variable length. In the case of England, in the three centuries from the death of Alfred till the accession of Edward I., there is little or no evidence of any strong national feeling, for the Normans themselves were not sufficiently numerous to subjugate the Saxons had the latter been in one of their vigorous periods. With Edward I., however, such vigour returned, and historians generally have, without reference to populations, selected this period as that at which the English nation began to be definitely formed. The next period of germinal weakness lasted from about 1380 till about 1525, and the last approximately from 1625 till 1760. The periods of germinal quiescence do not of course quite coincide with the periods of national weakness, as great men born in energetic times live on into the next period, and the reputation of strength lives longer than the reality. This was very notably the case with Spain. But these periods of quiescence may be yet shorter. In the case of France, already discussed, some were certainly not more than sixty years. As for the periods of energy there is little evidence of any lasting longer than a century. Evidence is, however, very difficult to obtain, and it is not clear that the great periods of Athens or of Florence do not represent a longer period of energy. The bearing of these facts and theories on history is very evident. If a nation is capable at special times of putting forth great efforts, it may be expected that these times will correspond with those of her national glory, especially so if she finds at the same time the countries in her vicinity in periods of lethargy. Thus an explanation is afforded of the difficulty England met with in trying to conquer Scotland, in the fact that the Lowland Scots being the same race as themselves had their periods of energy at the same time. Thus Wallace and Bruce coincided with the Edwards. Later when there was apparently every possibility of the northern kingdom following a prey to the southern, the latter had none of the energy necessary for the occasion. The conduct of the English after the battle of Flodden is an example of a nerveless grasp of affairs, possible in a time of energy under incapable rulers, but not probable at the date in question had the English nation been capable of effort.

It would seem that the course of French and English history has similarly been affected by the alternation of periods of energy and lethargy. In this case the periods of energy have not coincided, but have more or less alternated; thus the English at one moment overran France and in the almost immediately succeeding period were thrust out. This can be roughly traced from the time of Philip the First. At this period the energy of France was very great. It expended itself on the one hand in the expeditions of William against England, and on the other hand in the Crusades, at this time a movement essentially French. The period of the defeat of the English after the death of Henry V., and also of the consolidation of the French kingdom under Louis XI. marks another of the periods when France was energetic. Later the times of Richelieu and Louis XIV. are those of marked glory in France. The latter monarch, however, outlived the times of energy, and found himself in his old age without the aid and support of that circle of ability which contributed the greatest part of the fame of his prime. And lastly, the period of the Revolution and the early nineteenth century marks the last period of energy in France. Unfortunately the estimates of the population in France are not sufficient to fully prove that these periods were also the periods of increase in the population, but this was the case in the last named epoch, and almost certainly in the two preceding.

The application of the theory developed to the natural history of plants and animals now falls to be considered. Man is an animal that can be studied in a detail impossible in other species, and the facts which have been described hitherto would certainly have escaped notice had they referred to any species of animal. Species, it is well known, vary in numbers in any given neighbourhood, but there are so many influences at work more or less beyond our ken that there is no possibility at the present moment of accounting completely for the changes observed. There seems no doubt, however, that a part of the process is a rythmic one. In the somatic life it expresses itself by periods of specially quick growth followed by periods of rest. In the germinal plasm it expresses itself by epochs of racial increase and energy. These last two need not necessarily be combined, but as has been seen in many cases they are so. This storing up of energy was first made apparent to me when studying outbursts of energy in forms directly associated with my epidemiological work. I have shown that there is in all epidemics almost complete evidence that the organism causing the epidemic has suddenly assumed great infecting power; that is, that a storing of energy has gone on till the point of liberation is reached. I have also shown that the infecting organism also loses this power of infecting at a rate closely approximating to the geometrical progression, that is, if the infecting power is, say x at one point of time, it may be represented by xy at the end of a unit of time, and by xy^2 at the end of the next unit of time, y being a constant necessarily less than unity. This, as far as can be shown, is a property depending on the condition of the organism during the period of the epidemic, and not a property immediately depending on the environment of the organism. Of course the conditions which lead to the storing up of germinal or infecting energy must be dependent on the environment very largely, but once the storage of energy has reached a certain point liberation will ensue, and the next period of the organism's existence will be independent of the surroundings to a much greater extent than in the immediately preceding period. The change from moderate infectivity to that of high infectivity is also sudden, for were it not so the curve which represents the course of the epidemic would have a different form form that which it actually possesses. The investigation regarding the epidemic, however, has a wider significance than the mere statement above. Epidemics are caused by various kinds of organisms both plant and animal. It is to be noticed that the same law applies indifferently whatever the source of the infection. It applies to the bacilli of plague and enteric fever, to the spirillum of cholera, to the parasites of smallpox, probably protozoal, and to those of yellow fever almost certainly protozoal. It thus expresses a biological law in all probability a feature of life in general.

When we come to apply the rule to a higher stage of life there is still further difficulty. With regard to all such things there is the greatest lack of the kind of evidence that is most useful. One of the most interesting series of experiments is that carried out at Rothamsted on the effect of manures on the growth of different kinds of herbage on meadow land. The effect of manures interests us at present secondarily, but the control experiments are of special importance. In these for more than fifty years plots of ground which grow meadow hay have received no manure at all.[1] The numbers of the different species have been counted at intervals and recorded. It has been found that there is great variation from year to year in the amounts of different species of grasses, leguminous plants, and other weeds. Certain plants attain a maximum, and descending to a minimum, in some instances almost disappear. In the case of the vegetable kingdom there is, however, a much closer relationship between the actual nutrition of the plant and its germinal efficiency than that which exists among animals. De Vries has found in his evolution experiments that nutrition is one of the most important factors in the production of variability. Not only is this the case in regard to the production of seed but also it is to be noted that if germinating seeds are starved in the earliest period of growth the plants produced do not possess the same capacity for variation. In the individual then as in the race this rhythmic process is at work. With good nutrition there is a period of storage of energy which may be liberated later in the production of new forms to a greater extent than is seen with plants of the same species less favourably situated. One of the points of most present interest in the work of De Vries, however, concerns his investigation into the facts of mutation. Plants are only rarely in a condition in which mutations can take place. Only in a few instances do these mutations seem to be taking place at the present time. This suggests that the faculty is allied to the rhythmic process described. De Vries' work on *Oenothera Lamarkiana*, however, also affords a verification of one of the hypothesis advanced at the beginning of this paper. It was there stated as probable that just as somatic growth seemed to cease suddenly, as exemplified in those infants which lived but a short time after birth and which no medical art could save, so species might arise in which the germinal forces were so low that the species could not survive. Now with regard to the mutations or new subspecies observed by De Vries some were quite sterile; others with careful nursing took on a healthier habit but produced seeds in much less numbers than the parent plant. Again in some other instances the faculty of reproduction was as good if not better than that of the parent plant. Not in this instance alone, however, does this inability to procreate exist. As he remarks—"Many valuable fruits are quite sterile or produce extremely few seeds. It is open to discussion as to what may be the immediate causes of this sterility, but it is quite evident that all such sterile varieties must have originated in the cultivated condition otherwise they would immediately have been lost."

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[1] "The Book of the Rothamsted Experiments" (Hall, 1905, pp. 154-191).

Another instance of a similar rhythmic variation in plant life which has also an analogy among the animal life is that of sexual maturation. Seeds cannot be expected in certain trees such as fruit trees until the plant is a certain age. That this is a real process of energy storage is evidenced by the fact that fruit growers in evolving new varieties of fruits, bring their new varieties to an early maturation by "grafting, because thereby the life from seed to seed may be reduced to a few years."

In the animal kingdom analogies are more easily adduced. Plagues of animals have been described in all periods of history, and at the present day examples are not infrequent. Thus recent years saw large epidemics of field mice in different European countries, one of the chief being that in the lowlands of Scotland. If the history of these outbreaks is examined it will be found that the reason of their onset is in general quite obscure. Even with regard to locusts, to the destruction of which in some Eastern countries much systematic attention is given, no definite sequence of events can yet be shown to precede or to follow their appearance. It seems certain that in these instances too we have examples of the storing up of energy in such a manner as to result in germinal efficiency. This and some other matters will be further discussed in a future paper.

The general conclusions of the paper are as follows:—

1. The birth rate is not dependent in general on the immediate conditions which surround the organism, but upon conditions which probably precede the period of high birth rate and which are favourable to the storage of the specific energy. It will thus happen that a high birth rate occurs in times of actual scarcity or even famine. Such times would be obviously favourable for the development of new species. If the food supply be defective and the birth rate high powerful selection influences are evidently possible.

2. The numbers of a species and its power of increase may be an inherent property of the nature of the germinal vitality of the particular species so that rapid proliferation may be impossible for that species. A species may likewise acquire for a time special germinal vitality so that the numbers increase with the greatest rapidity, or even to such an extent as to cause germinal weakness, just as in those cases of specially rapid growth in individual animals the organism is left so weakened that a long period of rest is required to re-establish the metabolic equilibrium. If such a weakening of germinal fitness occurs then it is evident that an epidemic of a species might be, as it often is, followed by a scarcity of it, and even the complete extinction of the animal is conceivable. It may thus be that a species from its origin has in it set the seeds of its death. That it is not a universal rule is shown by the persistence of some genera from early geological period to the present day.

3. It is not necessary to assume that germinal fitness expresses itself in great fertility. The ovum is a very complex body and there seems no reason to deny that some particular part of it may have its potentialities developed specially at a certain time. This

would explain to a certain extent such a phenomenon as the Dutch school of painters who were all born within a few years of each other and died without successors. It also throws a certain amount of possible light on the appearance of new forms. The same alteration of the germinal plasm might take place at the same time in a large number of individuals and thus produce a tendency to vary in the same direction, so that if the natural environment were suitable a rapid change might be produced.

4. There would seem to be no necessity that a whole species should store up energy at the same time. Thus plagues of voles have never apparently occurred all over the country at the same time. In other words such plagues do not seem to be a necessary consequence of weather conditions or of food supply. At the present time each succeeding generation of man is produced by about half of the preceding generation. There is, however, no certainty that, in a period of germinal activity, these would be the most prolific portion of the race. It would seem, indeed, that the production of a virile race, apart from the care of the environment and education of the present persons, is a more remote possibility on biological grounds than even at the present time some think it to be.

5. I do not mean to discount, in what I have said, the influence of environment in producing an increase of the population. Thus the invention of the mechanisms of production undoubtedly was a factor in the great increase of population in modern Europe, but only a subsidiary factor. Had not the racial conditions been favourable the latter would not have produced any specially marked effect. It can be constantly seen in history that plagues and famines have not had much effect on inhibiting the increase of the population if a wave of germinal vitality was present and also good conditions as little in producing an increase.

The relation of the preceding remarks to the question of the fall of the birth rate now falls to be considered. If a nation increase in numbers then it is evident that, apart from immigration, there must be an excess of the births over the deaths. Looking to the past it would seem more probable that a period of increase was associated rather with a high birth rate than with a low death rate, though it must be noted that a period of germinal vitality might show its effects in greater physical strength of the population as well as in a higher birth rate. Variation in the birth rate is not, however, a phenomenon unknown before the present date. In the accompanying table (Table I.) the figures relating to

TABLE I.—Showing the Population, Death Rates, and Birth Rates in Geneva, 1695-1833.*

	Average Population.	Birth Rate.	Death Rate.
1695-1710	17,700	36·8	39·3
1711-1730	20,000	33·4	31·7
1731-1750	21,500	31·5	30·1
1751-1770	23,500	33·3	29·4
1771-1791	25,000	31·2	29·7
1806-1812	23,500	24·3	29·6
1814-1823	24,500	20·8	20·6
1824-1833	26,000	22·4	22·4

* Journal of *The Royal Statistical Society*, vol. 14, p.298.

Geneva, from 1685 till 1833, are given, and these show that in that city the beginning of last century was marked by a very striking fall in the birth rate, most marked after the actual state of war had passed, and peaceful conditions restored. It may also be noted, though the point is not directly germane to the present argument, that the death rate fell at the same time.

The present note will refer simply to Scotland which affords examples of all kind of population, city and country, industrial and agricultural. In the Registrar-General's return the births are classified as legitimate and illegitimate, but as both show a corresponding decline it is evident that the conditions which are at work in restricting the legitimate birth rate, are also having an effect on the illegitimate births as well. It will thus be sufficient to consider the legitimate birth rate alone. This restriction further assures greater accuracy because the numbers of married women at each age are accurately known from the census returns. The fertility rates of women at different age periods are also known for some allied races, and it has been found in the present investigation that these rates apply very accurately to the population of Scotland.

Before the birth rates in different districts can be compared a standard population is evidently necessary. For the purposes of this paper the population in Scotland in the year 1871 has been taken as the standard, as that year roughly marks the period when the fall in the birth rate began. To ensure accuracy as far as possible the crude birth rates obtained by dividing the number of births by the populations have been corrected by the method of Dr Newsholme so as to allow for the facts—

(*a*) That the proportion of married women to the total population varies from census to census, and

(*b*) That the relative age of these women also varies, and allowance for the different fertility rates at the different ages must be made.

Scotland is divided by the Registrar-General into eight districts of which the names and constitution are given in the accompanying table (Table II.).

As the immigration into the great towns brings about a condition of things there hardly comparable with the rest of the country it has been thought well to exclude them from the districts in which they occur, though they are included of course in the birth rates for Scotland as a whole.

With regard to the whole country we find that the legitimate birth rate was in 1871 31·46 per thousand, This had fallen to 28·60 in 1881, to 27·72 in 1891, and to 25·36 in 1901. This fall is equivalent to about twenty per cent. in thirty years, though the difference due to the change in the age constitution of the population, at these different dates would only account for a fall of three per cent. It is thus seen that the higher age at which marriage now takes place affords an explanation of only a small part of the actual loss of fertility.

When the table is further examined it is seen that the fall in the birth rate has not been uniform all over Scotland, but that the country roughly divides itself into two portions, one including Divisions I., II., III. and V., and the other Division IV., VI., VII. and VIII. In the former the fall has varied from nine to thirteen per cent., and in the latter from seventeen to eighteen. These latter divisions include many different conditions of life, agricultural, mining, and industrial, and yet all afford evidence

TABLE II.—Showing the Birth Rates in each district of Scotland in 1881 and 1901. The birth rate of Scotland in 1871 namely, 31·46, being taken as that of a standard population, the great towns—Glasgow, Edinburgh, and Aberdeen being excepted. (Legitimate Births alone considered.)

	1881	1901	Percentage Decrease.
NORTHERN DISTRICT.—Orkney, Shetland, Caithness, Sutherland, -	30·8	27·5	10·7
NORTH WESTERN.—Ross and Cromarty, Inverness, - - - -	32·4	28·4	12·6
NORTH EASTERN.—Nairn, Elgin, Banff, Aberdeen, Kincardine, (excluding town of Aberdeen), - -	31·0	27·0	12·9
EAST (Midland).—Forfar, Perth, Fife, Kinross, Clackmannan, - -	28·9	23·9	17·3
WEST (Midland).—Stirling, Dumbarton, Argyll, Bute, - - -	29·9	27·1	9·4
SOUTH WESTERN.—(Excluding town of Glasgow), Renfrew, Ayr, Lanark,	29·7	24·2	18·5
SOUTH EASTERN.—Linlithgow, Edinburgh, Haddington, Berwick, Peebles, Selkirk, (excluding town of Edinburgh), - - - -	30·5	25·4	17·1
SOUTHERN.—Roxburgh, Dumfries, Kirkcudbright, Wigtown, - -	28·8	23·6	18·6
SCOTLAND.—Including Glasgow, Edinburgh and Aberdeen, - - -	28·6	25·36	—

that some similar process is at work. In the West Midland district, which includes the shires of Argyll, Stirling, Dumbarton and Bute, there is least fall of all, though this district includes a larger residential population than any of the others. The whole distribution of the birth rate figures seems to disprove that any but natural causes are at work in the production of the change.

Another method of obtaining information is to consider how the birth rate is behaving in those districts where there is a large number of young married persons. Of such districts in Glasgow itself there is unfortunately no means of acquiring information

The suburbs, however, can be considered separately. Of these the chief are included in the parishes of Eastwood, Cathcart, Rutherglen, Cambuslang, Bothwell, Kirkintilloch and New Kilpatrick.

TABLE III.—Showing the Birth Rates, crude and corrected, in Scotland and Suburbs of Glasgow for the three years about each census since 1881. The birth rate of Scotland in 1871 namely, 31·46, being taken as that of a standard population.

Table A.—CRUDE BIRTH RATES (LEGITIMATE).

	Scotland.	Cathcart.	Eastwood.	Rutherglen.	Cambuslang.	Bothwell.	New Kilpatrick.	Kirkintilloch.
1881	30·81	31·69	31·14	35·64	44·46	37·84	34·74	32·48
1891	28·52	24·94	30·39	36·69	40·28	40·51	30·85	33·15
1901	27·63	22·73	27·46	33·01	38·19	39·68	29·92	30·55

Table B.—CORRECTED BIRTH RATES (LEGITIMATE).

	Scotland.	Cathcart.	Eastwood.	Rutherglen.	Cambuslang.	Bothwell.	New Kilpatrick.	Kirkintilloch.
1881	28·60	29·66	27·61	28·59	31·33	30·75	28·48	27·69
1891	27·72	25·41	25·85	29·21	30·04	32·36	26·60	31·08
1901	25·36	19·54	23·72	26·07	28·89	30·50	25·13	27·69

Though the population in none of these districts is purely residential the latter forms a sufficiently large proportion to make its presence felt if there was any great interference with the normal processes of conception. It will be seen on reference to the table (Table III.) that in many of these parishes the birth rate is very high, and that in none except Cathcart is there any fall in the birth rate comparable to that of Scotland as a whole. In that parish, however, the fertility has been reduced to an extent suggesting the presence of restrictive measures. The number of inhabitants in Cathcart, however, is so small a fraction of the population of Scotland as a whole that the effect produced on the national birth rate can only be insignificant.

RULES GOVERNING THE COMPETITION FOR THE GRAHAM MEDAL.

1. The competition for the Graham Medal shall be under the authority and control of the Council of the Royal Philosophical Society of Glasgow, whose decision on all matters connected therewith shall be final.

2. Each candidate shall forward to the Secretary of the Royal Philosophical Society of Glasgow, 207 Bath Street, Glasgow, on or before 14th March of the year in which the competition is held, a paper giving an account of an unpublished original research conducted by himself in any branch of chemical science, pure or applied.

3. The award shall be made to the candidate whose research, in the opinion of the Council, or of the person or persons whom they may appoint to adjudicate in the matter, is of the highest merit and most likely to aid in the advancement of chemical science.

4. The value of the award shall be £10, and, according to the wish of the successful candidate, may take the form of (i) the Graham Medal in gold; (ii) the Graham Medal in bronze, and scientific instruments or books; (iii) the Graham Medal in bronze, and the balance in money to be applied in chemical research.

5. The paper, on account of which the medal is awarded, shall be read before the Royal Philosophical Society of Glasgow, and shall thereafter be published in the *Proceedings* of the Society.

6. No award shall be made if, in the opinion of the Council, no paper of sufficient merit has been offered.

MINUTES OF SESSION.

1907-1908.

6th November, 1907.

THE First Meeting of the Society, for Session 1907-1908, was held in the St. Andrew's (Kent) Hall, on Wednesday, 6th November, 1907. The President, Dr Freeland Fergus, occupied the chair.

1. Mr John T. Fleming, M.A., 129 Bath Street, was admitted to Membership.

2. Sir Edwin Ray Lankester, K.C.B., F.R.S., delivered a lecture, under the auspices of the Science Lectures Association Trust, on "Horned Beasts: the Extinct Monsters and the African Okapi, Giraffe, Antelopes, and Rhinoceros."

A vote of thanks was accorded to the lecturer on the motion of the Lord Provost, Mr William Bilsland, seconded by Sheriff Guthrie.

3. The Chairman intimated that the following gentlemen had been elected to Membership:—

1. Mr JAMES M'MICHAEL, Junr., Property Agent and Valuator, 1 Argyle Arcade. Recommended by Mr Wm Fraser, Mr John Mann, Junr., and Dr Fergus.
2. Mr JOHN A. MACTAGGART, Builder and Property Agent, Kelmscott, Springkell Avenue. Recommended by Mr Wm Fraser, Mr John Mann, Junr., and Dr Fergus.
3. Mr C. HOPE MURRAY, Junr., 98 West George Street. Recommended by Mr George Morton, Mr Alexander Macindoe, and Mr John Knox.
4. Dr W. A. PARKER, Physician Superintendent, Glasgow District Asylum, Gartloch. Recommended by Dr Fergus, Dr Oswald Fergus, and Dr L. R. Oswald.
5. Dr JOHN RITCHIE, 12 Belmont Street, Glasgow, W. Recommended by Dr A. Lewis M'Millan, Dr Fergus, and Dr Oswald Fergus.

REPORT OF COUNCIL FOR SESSION 1906-1907.

I. *Meetings of the Society.*—The opening meeting of Session 1906-1907 was held on the 7th November, 1906, and the closing meeting on 30th April, 1907. Twelve ordinary and two special meetings were held during the session, and nineteen communications made, of which the majority were communications from one or other of the Sections, and fairly represent the respective fields of investigation assigned to them.

II. *The Sections of the Society.*—The vigour and energy of the Sections continue unabated. To them must be credited all but a few of the papers, lectures and discussions put before meetings during the session. The total communications numbered close upon fifty, nineteen, as already mentioned, being made to meetings of the Society. As formerly, the Architectural Section, the Economic Science Section, and the Historical and Philological Section published programmes of work early in the session. Most of the remaining Sections contributed to meetings of the Society, or held sectional meetings as the occasion arose.

III. *The Proceedings.*—It is expected that the transactions of the Society for the session, Vol. XXXVIII. of the *Proceedings*, will be in the hands of Members within a few weeks. Intimation of its issue will be given as usual. The volume will contain eighteen papers: fifteen in full, and three abbreviated or in abstract. Thirteen of the papers were read before the Society, and the remainder (including one read in March, 1906), at sectional meetings. But taking into account the communications from the Sections to the general meetings, the Sections contributed about fifty per cent. of the printed matter.

IV. *Representatives of the Society.*—Dr Freeland Fergus was appointed to the Governing Board of the Glasgow Technical College in room of Mr Walter W. Blackie, resigned; Dr John Brownlee was appointed to the Executive Committee of the Millport Marine Biological Association, in room of the late Mr John Robertson; Dr Knight was appointed delegate at the Centenary Celebration of the Geological Society of London, and Dr David Ellis was appointed delegate for the Meeting of the British Association.

V. *Vacancies in the Council.*—Dr James Knight was appointed Honorary Librarian in room of the late Mr John Robertson. The appointment was confirmed by the Society at the elections in April. Mr. John M'Kellar was appointed a Member of Council in room of Dr Snodgrass who was elected Vice-President.

VI. *The Library.*—The Report of the Library Committee is given separately below.

VII. *Membership.*—During the Session 36 Members were elected, 21 have resigned, 9 have been struck off the roll for non-payment of their subscription, and 15 have died. The following are the names of the deceased:—Sir Charles Tennant, Principal Story, Dr James Finlayson, Dr Robert Kirk, Robert Hogg, A. C. Whyte, A. M. Brown, Daniel Munro, Thomas Jenkins, George Munro Kerr, Robert Orr, Robert Cochran, Robert Proctor, Thomas Glen

Arthur, John Robertson. Mr Cochran was a Life Member. During the Session four new and three old Members qualified as Life Members. The roll now includes 14 Honorary Members, 18 Corresponding Members, and 945 Ordinary Members (Life and Annual), or a total of 977.

VIII. *Finance.*—The Treasurer's statement for Session 1906-1907 shows an excess of Revenue over Expenditure of £231 12s. 2d., as against £191 3s. 9d. for Session 1905-1906. The Capital of the Society at 30th September, 1907, as shown in the Balance Sheet, was £5,219 15s. 9d., irrespective of the value of the library.

Separate statements are given by the Treasurer, as formerly, showing the position of the two funds which the Society holds in trust, viz.:—"The Graham Medal and Lecture Fund" and "The Science Lectures Association Fund," the balances of Revenue being £114 13s. 4d. and £35 17s. 5d. respectively.

PETER BENNETT, *Secretary.*

REPORT OF THE LIBRARY COMMITTEE.

Suitable reference has been made elsewhere to the loss sustained by the Society in general, by the death of Mr John Robertson, and in no department of the Society's work has that loss been more severely felt than in connection with the Library, which Mr Robertson had made his own special sphere of action.

The Reading-Room, with its wealth of magazines in science and art, representing practically the research of the civilized world, maintains its attractions, while during the Session 880 volumes were issued to Members. There were presented to the Library 97 volumes, 10 parts of works, and 14 pamphlets, while 82 volumes were added by purchase. No change has been made in the system of exchange, in virtue of which the *Proceedings* of the Society are forwarded to 192 Societies and Public bodies in exchange for their publications.

To extend the scope of the Library, while lessening expense, a working agreement has been made with the Natural History Society and the Geological Society, so as to avoid overlapping in the matter of purchases, and obtain within certain limits community of library privileges. It is confidently expected that this arrangement will not only attain the ends desired, but will induce a real community of interest in the Societies concerned.

The Library has been recently strengthened very materially in the departments of History, Chemistry, and Biology; all the Sections of the Society are represented on the Committee, so as to secure proportionate treatment, and everything is being done to render the Library more useful for sectional research, while keeping in view the wider demands of the general reader. Members are reminded that a Recommendation Book lies on the table to receive proposals for additional books. The sectional representatives are always willing to voice the requests of their own associates, and as hitherto, all new books are entered in the Library copy of the catalogue, besides being entered at intervals in the ordinary billets, and in the volume of *Proceedings*. All new books lie on the table for three months for the inspection of members.

Volume XXXVIII. of the *Proceedings* contains a list of the books purchased, and of those presented, along with the names of the donors, the titles of all periodicals received by the Society, and the list of exchanges.

James Knight, Hon. Librarian,
Convener.

20th November, 1907.

The Second Meeting of the Society, for Session 1907-1908, was held in the Rooms, 207 Bath Street, on Wednesday, 20th November, 1907. The President, Dr Freeland Fergus, occupied the chair.

1. The Minute of Meeting of date 6th November was approved, and was thereupon signed by the Chairman.

2. The Abstracts of Accounts for the year, signed by the Auditors, Mr A. S. Murray and Mr W. W. Naismith, C.A., were submitted by Mr John Mann, Junr., and adopted, and a vote of thanks passed to the Auditors. The Annual Report of the Library Committee was submitted by the Hon. Librarian, and adopted, and a vote of thanks to the donors of books, etc., passed. The Annual Report of Council was submitted by the Chairman and, after discussion, was adopted.

3. Mr J. V. Stevenson, Chief Constable of the City of Glasgow, read a paper entitled, "The Prevention and Punishment of Crime," being a communication from the Sanitary and Social Economy Section.

Treasurer D. M. Stevenson, Bailie Bruce Murray, Rev. A. M. Gentles, Mr John Mann, Junr., Mr James Gardiner, Major D. S. Miller, Detective-Superintendent John Ord, and Dr Neilson took part in the discussion which followed; and, on the motion of the Chairman, the thanks of the Meeting were accorded to Mr Stevenson.

4. The Chairman announced that the following gentlemen had been elected to Membership:—

1. Mr W. R. Copland, 146 West Regent Street. Recommended by Mr H. F. Stockdale, Professor Magnus Maclean, and Professor Bennett.

ABSTRACT OF REVENUE AND

AND COMPARISON WITH

ORDINARY REVENUE.				1906 1907.			*1905-1906.*		
				£	s.	d.	*£*	*s.*	*d.*
Subscriptions of 642 Members, at £1 1s.,	£674	2	0						
Arrears, - - - - - - -	2	2	0	676	4	0	*690*	*18*	*0*
Subscriptions of Associates of Sections—									
Architectural, - - - - - -	£18	0	0						
Economic Science, - - - -	14	15	0						
Historical and Philological, -	2	0	0						
Mathematical and Physical, - -	0	10	0	35	5	0	*28*	*10*	*0*
				£711	9	0	*£719*	*8*	*0*

EXTRAORDINARY REVENUE.

Excess of Ordinary Revenue over Ordinary Expenditure brought down, - - - - - - - -	£105	12	2	*£60*	*8*	*3*
Subscriptions—						
36 Entry Moneys, at 21s., - - - - - - -	37	16	0	*65*	*2*	*0*
7 Life Subscriptions, at £12 12s., - - - - - -	88	4	0	*75*	*12*	*0*
Profit on Realisation of Investment, - - - - - -	0	0	0	*37*	*15*	*3*
	£231	12	2	*£238*	*17*	*6*

EXPENDITURE—SESSION 1906-1907

SESSION 1905-1906.

ORDINARY EXPENDITURE.			1906-1907.	*1905-1906.*
			£ s. d.	*£ s. d.*
Administration Expenses—				
Remuneration to Acting Secretary, - -		£100 0 0		
Allowance for Treasurer's Clerks, - -		15 0 0		
Commission to Collectors, - - - - -		6 7 10		
Telephone Rent, - - - - - - -		5 10 0		
Stationery, - - - - - - - -		1 9 0		
Fire Insurance on Library, - -		6 10 0		
Postages and Sundry Charges,	£25 8 8			
Less Papers Sold, - -	0 1 0			
		25 7 8		
Expenses of Rooms—			160 4 6	*164 16 1*
Upkeep and Service for year,	£297 7 7			
Interest on Bond, - -	108 1 4			
		£405 8 11		
Less Interest on Investments, - -		14 7 2		
		£391 1 9		
Deduct—Rents from Institution of Engineers and other Societies, - - - -		301 13 0	89 8 9	*90 5 6*
Library—				
New Books and Periodicals, British and Foreign, - -			104 7 3	*179 19 6*
Printing—				
Printing and Postage of *Proceedings*, Circulars, etc., -			225 18 3	*203 16 3*
Subscriptions to Societies—				
Ray Society, - - - - - - - - -		£1 1 0		
Palæontographical Society, - - - -		1 1 0		
			2 2 0	*8 8 0*
Expenses of Sections per Secretaries—				
Architectural, - - - - - - - - -		£8 9 7		
Economic Science. - - - - - - -		12 9 1		
Historical and Philological, - -		2 10 5		
Sanitary and Social Economy, - - - -		0 7 0		
			23 16 1	*11 14 5*
Excess of Ordinary Revenue over Ordinary Expenditure carried down, - - - - - - -			105 12 2	*60 8 3*
			£711 9 0	*719 8 0*

EXTRAORDINARY EXPENDITURE.	1906-1907.	*1905-1906.*
Legal Expenses, in connection with Purchase of Property, Lease, etc., - - - - - - - - - - - -	0 0 0	*39 14 11*
Expenses of Rooms, - - - - - - - - -	0 0 0	*7 18 10*
Surplus carried to Capital Account, - - - -	231 12 2	*191 3 9*
	£231 12 2	*£238 17 6*

Royal Philosophical Society of Glasgow.

BALANCE SHEET, AS AT 30TH SEPTEMBER, 1907.

LIABILITIES.

BOND—						
Over Buildings at 3½%,				£3250	0	0
ACCRUED CHARGES—						
Interest, Rates, etc.,				20	17	0
CAPITAL—						
At beginning of year,	£4988	3	7			
Add Surplus per Revenue Account,	231	12	2			
				5219	15	9
				£8490	12	9

ASSETS.

BUILDINGS—						
207 Bath Street—Buildings and Furnishings, per last Account,				£7933	7	4
LIBRARY—						
Not valued,				0	0	0
CASH—						
Clydesdale Bank—Deposit Receipt,	£555	0	0			
In Treasurer's hands	2	5	5			
				557	5	5
				£8490	12	9

GLASGOW, *17th October, 1907.*—We, the Auditors appointed by the Society to examine the Honorary Treasurer's Accounts for the Session 1906-1907, have examined the same, and have found them correct, the Balance of Cash in the Treasurer's hands being Two Pounds Five Shillings and Five Pence.

(Signed) A. S. MURRAY,
W. W. NAISMITH, C.A., } *Auditors,*

JNO. MANN, C.A., *Honorary Treasurer,*

GRAHAM MEDAL AND LECTURE FUND.

ABSTRACT OF TREASURER'S ACCOUNT, SESSION 1906-1907.

Dr.

CAPITAL AT 30th SEPTEMBER, 1906—		
£250 Glasgow and South-Western Railway Co. 4 Per Cent. Preference Stock in name of the Philosophical Society, in Trust, - - - - -	£250 0 0	
Value of Die at H.M. Mint, - -	18 18 0	
		£268 18 0
ACCUMULATED REVENUE AT 30th SEPTEMBER, 1906—		
Cash in Bank, - - - - - - -		101 18 8
REVENUE—		
Dividend, March, 1907, less Tax, -	£4 15 0	
,, Sept., ,, ,, -	4 15 0	
Interest from Bank, - - - -	3 4 8	
		12 14 8
		£383 11 4

Cr.

CAPITAL AT 30th SEPTEMBER, 1907—		
Investment, *per contra*, (present value, £262 16s. 3d.), - -	£250 0 0	
Die, - - - - - - - -	18 18 0	
		£268 18 0
BALANCE, BEING REVENUE—		
In Bank, on Deposit Receipt, - - - -		114 13 4
		£383 11 4

GLASGOW, 17*th October*, 1907.—Examined and found correct.

(Signed) A. S. MURRAY,
W. W. NAISMITH, C.A., } *Auditors*

JNO. MANN, C.A., *Honorary Treasurer.*

THE SCIENCE LECTURES ASSOCIATION FUND.

ABSTRACT OF TREASURER'S ACCOUNT—SESSION 1906-1907.

Dr.

CAPITAL AT 30th SEPTEMBER, 1906—						
£200 Caledonian Railway Company 4 Per Cent. Preference Stock, in name of the Philosophical Society, in Trust, - - - - - - -	£244	4	8			
On Deposit Receipt, - - - - -	8	5	4			
				£252	10	0
ACCUMULATED REVENUE AT 30th SEPTEMBER, 1906—						
Cash in Bank, - - - - - - - - - -				27	2	10
REVENUE FOR YEAR 1906-1907—						
Dividend, April 1907, less Tax, - -	£3	16	0			
,, Oct., ,, ,, - -	3	16	0			
Interest from Bank, - - - - -	1	2	7			
				8	14	7
				£288	7	5

Cr.

CAPITAL AT 30th SEPTEMBER, 1907—						
Investment, *per contra* (present value, £216), - - - - -	£244	4	8			
In Bank, on Deposit Receipt, - -	8	5	4			
				£252	10	0
BALANCE OF REVENUE AT 30th SEPTEMBER, 1907—						
In Bank, on Deposit Receipt, - - - - - -				35	17	5
				£288	7	5

GLASGOW, *17th October, 1907.*—Examined and found correct.

(Signed) A. S. MURRAY,
W. W. NAISMITH, C.A., } *Auditors.*

JNO. MANN, C.A., *Honorary Treasurer.*

2. Mr H. G. Cree, 37 West Nile Street. Recommended by Mr John Mann, Junr., Professor Bennett, and Professor Mellanby.
3. Mr William Hutchison, LL.B., 208 West George Street. Recommended by Professor Bennett, Mr H. F. Stockdale, and Professor Magnus Maclean.
4. Mr Thomas Kerr, 8 Dungoyne Gardens, Maryhill, Glasgow. Recommended by Mr William Kerr, Professor Archibald Barr, and Mr J. M'Kellar.
5. Mr W. F. Lanchester M.A., Den of Gryffe, Kilmacolm. Recommended by Professor J. Graham Kerr, Professor F. O. Bower, and Dr Fergus.
6. Mr W. L. M'Kerrow, 65 Hamilton Drive, Hillhead. Recommended by Mr John A. Galbraith, Mr Gilbert Innes, and Mr John A. Ferguson.
7. Mr W. S. Syme, M.D.(Edin.), 10 India Street, Glasgow. Recommended by Mr J. V. Stevenson, Dr George Neilson, and Mr John Clark.

4th December, 1907.

The Third Meeting of the Society, for Session 1907-1908, was held in the Rooms, 207 Bath Street, on Wednesday, 4th December, 1907. The President, Dr Freeland Fergus, occupied the chair.

1. The Minute of Meeting of date 20th November was approved, and was thereupon signed by the Chairman.

2. Two papers were read; one by Mr Thomas Machell on "Keyboard Percussion Instruments," with lantern and musical illustrations; and the other by Mr James Logan, on "Some Experiments in the Simplification of Reed Brass Instruments," with demonstrations. Mr Machell and Mr Logan were accorded the thanks of the Meeting on the motion of the Chairman.

3. The Chairman announced that the following gentlemen had been elected to Membership:—

1. Mr James Gardiner, Belleville, Hatfield Drive, Kelvinside. Recommended by Sir William Bilsland, Mr D. M. Stevenson, and Mr Andrew H. Pettigrew.
2. Mr Charles Kirkwood, 67 West Regent Street. Recommended by Mr William Fraser, Mr Thomas S. Fraser, and Dr Fergus.

18th December, 1907.

The Fourth Meeting of the Society, for Session 1907-1908, was held in the Rooms, 207 Bath Street, on Wednesday, 18th December, 1907. The President, Dr Freeland Fergus, occupied the chair.

1. The Minute of Meeting of date 4th December was approved, and was thereupon signed by the Chairman.

2. The New Members elected at last Meeting were duly admitted.

3. The President intimated the death, on the 17th inst., of Lord Kelvin; and, the Standing Orders having been suspended, said:—I feel sure that the thought which was uppermost in the mind of each one of us as we came to this hall to-night was the great loss which this Society has sustained by the death of its most distinguished member. This is not the time, although it may be the place, to attempt the appreciation of the life, work and character of the great man who has passed from among us, but I feel sure that those who are better able than I am to form a just estimate of the scientific position of the late Lord Kelvin will tell us that British science has received no greater loss since the death of Sir Isaac Newton himself. When I heard of Lord Kelvin's death my first impulse was to suggest that the meeting to-night be adjourned as a mark of our deep respect. Probably, however, that is the very last thing which his lordship would have wished. Our sense of loss is a very real one; it is well nigh that of personal bereavement, for Lord Kelvin was in his time probably the most voluminous contributor that the Society has had. Naturally our thoughts turn to those whom he has left behind, and our most respectful and sincere sympathy goes out to them in their sorrow. I shall add nothing further to these remarks, but merely content myself now by moving—"That the Society has heard with the deepest sorrow of the death of the Right Honorable Lord Kelvin, who was for fifty years one of its most active ordinary members, and who has, since 1896, been one of its honorary members. They fully appreciate his remarkable services to the advancement of the physical sciences and the great lustre which his distinguished position in the scientific world has shed upon the University of Glasgow and upon the many scientific

societies of which he was a member. The Society requests the Council to forward to Lady Kelvin and to the other relatives of the deceased peer an expression of their deep and respectful sympathy, and remits it to the Council to take such steps as may be necessary in the circumstances."

The motion was formally seconded by Dr R. F. Muirhead, and unanimously passed.

4. Mr R. C. Munro Ferguson, M.P., read a paper on "Small Holdings," being a communication from the Economic Science Section. Among the speakers in the subsequent discussion were Sir John Stirling-Maxwell, Bart., Mr Alexander Blair, Mr William Buchanan, Mr William Fraser, Bailie Graham, Dr Duff, and Mr John Mann, Jr. A vote of thanks was accorded to Mr Munro Ferguson on the motion of the Chairman.

5. Mr William S. M'Kechnie, M.A., LL.B., D.Phil., Knightswood, Elderslie, Renfrewshire, recommended by Dr Neilson, Mr J. T. T. Brown, and Mr J. Clark, was elected to Membership of the Society.

15th January, 1908.

THE Fifth Meeting of the Society, for Session 1907-1908, was held in the Rooms, 207 Bath Street, on Wednesday, 15th January, 1908. In the absence of the President Mr John Mann, Jr., Vice-President, occupied the chair.

1. The Minute of Meeting of date 18th December, 1907, was approved, and was thereupon signed by the Chairman.

2. The New Member elected at last Meeting was duly admitted.

3. Mr William Fraser, F.S.I., read a paper entitled "Fluctuations of the Building Trade: Production and Market of House Accommodation," being a communication from the Economic Science Section. Among the speakers in the subsequent discussion were, Mr George Eadie, Mr Harrison, Dr Duff, Mr John C. M'Kellar, Mr Stewart, Mr Ferguson, Mr Binnie, Mr Fyfe, Mr Stevenson, Mr Adam, Mr M'Michael, and Mr John Mann, Jr. A vote of thanks was accorded to Mr Fraser on the motion of the Chairman.

4. The following gentlemen were elected to Membership:—

1. Mr Henry M. Arthur, C.A., 79 West Regent Street. Recommended by Mr Charles E. Beckett, Professor William Smart, and Dr Freeland Fergus.
2. Mr Alexander Blair, F.S.I., 198 West George Street. Recommended by Mr Wm Fraser, Mr Thos S. Fraser, and Mr John Mann, Junr.
3. Mr Anthony Purdie, F.S.I., 241 West George Street. Recommended by Mr Wm Fraser, Mr Thos S. Fraser, and Mr John Mann, Junr.
4. Mr Donald T. Stewart, 124 Cambridge Street. Recommended by Mr Wm Fraser, Mr Thos S. Fraser, and Mr John Mann, Junr.
5. Mr James B. Stewart, 124 Cambridge Street. Recommended by Mr Wm Fraser, Mr Thos S. Fraser, and Mr John Mann, Junr.

31st January, 1908.

The Sixth Meeting of the Society, for Session 1907-1908, was held in the Rooms, 207 Bath Street, on Friday, 31st January, 1908. The President, Dr Freeland Fergus, occupied the chair.

1. The Minute of Meeting of date 15th January, 1908, was approved, and was thereupon signed by the Chairman.

2. The New Members elected at last Meeting were duly admitted.

3. The following note in answer to the President's letter of condolence to Lady Kelvin on the death of Lord Kelvin was read:—

ROYAL PHILOSOPHICAL SOCIETY OF GLASGOW.

> Lady Kelvin desires that the warmest thanks shall be expressed to all the many kind friends who have sent telegrams and letters so full of affectionate sympathy.
>
> She feels deeply the world-wide interest and the appreciative tributes paid to the memory of her beloved husband, Lord Kelvin.
>
> Lady Kelvin regrets that, owing to her recent severe illness and the present state of her health, she is unable to write or attend to letters personally.
>
> Netherhall,
> Largs (Ayrshire). *January, 1908.*

4. Professor W. Paton Ker, M.A., LL.D., delivered a lecture on "Don Quixote." Appreciative remarks were afterwards made by Dr Neilson, Mr Edwards, Mr J. T. T. Brown, and the Chairman, and a vote of thanks passed to Mr Kerr.

5. Mr George Eadie, Builder, 405 Mathieson Street, recommended by Mr Wm Fraser, Mr Thomas S. Fraser, and Mr John Mann, Jr., was elected to Membership of the Society.

12th February, 1908.

THE Seventh Meeting of the Society, for Session 1907-1908, was held in the Rooms, 207 Bath Street, on Wednesday, 12th February, 1908. In the absence of the President, Mr H. A. Mavor, Vice-President, occupied the chair.

1. The Minute of Meeting of date 31st January, 1908, was approved, and was thereupon signed by the Chairman.

2. The New Member elected at last Meeting was duly admitted.

3. Mr Walter A. Scoble, B.Sc., Wh. Sch., read a paper on "Aerial Flight," being a communication from the Mathematical and Physical Section. A small flying machine was exhibited, and a large number of lantern slides shown. A number of questions arising out of the paper were answered by Mr Scoble, and a vote of thanks to him passed on the motion of the Chairman.

4. Mr A. Brown Kelly, M.D., D.Sc., 26 Blythswood Square, recommended by Dr Freeland Fergus, Dr R. H. Parry, and Dr Oswald Fergus, was elected to Membership of the Society.

26th February, 1908.

THE Eighth Meeting of the Society, for Session 1907-1908, was held in the Rooms, 207 Bath Street, on Wednesday, 26th February, 1908. In the absence of the President, Dr William Snodgrass, Vice-President, occupied the chair.

1. The Minute of Meeting of date 12th February, 1908, was approved, and was thereupon signed by the Chairman.

2. The New Member elected at last Meeting was duly admitted.

3. Professor Robert Wallace, of Edinburgh University, delivered a lecture, profusely illustrated by lantern slides, on "An Account of a recent visit to North America, including Mexico," being a communication from the Geographical Section. Appreciative remarks on the lecture were made by Mr J. V. Stevenson, and a vote of thanks passed to Professor Wallace on the motion of the Chairman.

4. Mr Robert MacLellan, 3 Clairmont Gardens, Glasgow, W., recommended by Dr Freeland Fergus, Mr John Mann, Jr., and Professor Peter Bennett, was duly elected to Membership of the Society.

11*th March*, 1908.

The Ninth Meeting of the Society, for Session 1907-1908, was held in the Rooms, 207 Bath Street, on Wednesday, 11th March, 1908. The President, Dr Freeland Fergus, occupied the chair.

1. The Minute of Meeting of date 26th February, 1908, was approved, and was thereupon signed by the Chairman.

2. The New Member elected at last Meeting was duly admitted.

3. Professor Magnus Maclean, M.A., D.Sc., read a memoir of the late Lord Kelvin, and received the thanks of the Meeting on the motion of the Chairman.

4. Professor A. L. Mellanby, D.Sc., read a paper entitled "Some Disputed Points in Steam Engine Theory," illustrated by lantern slides. Professor Jamieson, Mr Scoble, and Mr Sayers took part in the subsequent discussion, and a vote of thanks was passed to Professor Mellanby on the motion of the Chairman.

25*th March*, 1908.

The Tenth Meeting of the Society, for Session 1907-1908, was held in the Rooms, 207 Bath Street, on Wednesday, 25th March, 1908. The President, Dr Freeland Fergus occupied the chair.

1. The Minute of Meeting of date 11th March, 1908, was approved, and was thereupon signed by the Chairman.

2. The President referred to the loss sustained through the death of Sir James Marwick. He said that although in his later years Sir James was seldom at their meetings, many present would remember how much interest he formerly took in the Society, As lately as 1904 he contributed a valuable and learned paper to the *Proceedings* in connection with "Fairs and Markets as held in Ancient Times." A profound and great lawyer, a man of most genial and friendly disposition, and much interested in the advancement of knowledge, the removal of Sir James was a great loss to the whole community. He proposed that reference should be made in the Minutes to the effect stated, and this was unanimously approved.

3. Mr R. H. Tawney, B.A., read a paper on "The Theory of Pauperism," being a communication from the Economic Science Section. Speakers in the discussion were Mr Beckett, Mr S. Henry, Mr Ferguson, Dr Campbell, Mr Low, Mr Bremner, and Mr Jones, President of the Section. Mr Tawney replied, and received the thanks of the Meeting.

8th April, 1908.

THE Eleventh Meeting of the Society, for Session 1907-1908, was held in the Rooms, 207 Bath Street, on Wednesday, 8th April, 1908. The President, Dr Freeland Fergus, occupied the chair.

1. The Minute of Meeting of date 25th March, 1908, was approved, and was thereupon signed by the Chairman.

2. Mr Thomas Wilson read a paper, profusely illustrated by lantern slides, entitled "Queensland in 1906," and received the thanks of the Meeting on the motion of the Chairman.

3. The President intimated that it had been arranged by the Council to hold the next Meeting of the Society on the 29th curt.

29th April, 1908.

THE Twelfth Meeting of the Society, for Session 1907-1908, was held in the Rooms, 207 Bath Street, on Wednesday, 29th

April, 1908. The President, Dr Freeland Fergus, occupied the Chair.

1. The Minute of Meeting of date 8th April, 1908, was approved, and was thereupon signed by the Chairman.

2. The President announced that no additional nominations for the annual vacancies in the Council having been received, the nominees of the Council, duly advertised, were held to have been elected, viz :—

1. Vice-President—Professor J. GRAHAM KERR.
2. Ordinary Members of Council :—
   - (*a*) For three years—Dr JOHN BROWNLEE, Professor J. W. GREGORY, Dr JOHN INGLIS, Mr FRED. G. MACKILLOP;
   - (*b*) For two years—Principal ANGUS M'LEAN;
   - (*c*) For one year—Sir JAMES FLEMING.
3. Hon. Treasurer—Mr JOHN MANN.
4. Hon. Librarian—Dr JAMES KNIGHT.

3. Dr Ebenezer Duncan read a paper on "Some Observations on the Consumption of Alcohol, and on the Comparative Death-Rate from Alcoholic Excess in England, Ireland and Scotland." Speakers in the discussion on the paper were Mr John Mann, junr., Dr John C. M'Vail, Dr A. K. Chalmers, Dr Sime, Dr Carswell, and the Chairman, on whose motion a vote of thanks was passed to Dr Duncan.

4. Dr John Brownlee read a paper entitled, "The Growth of Nations in Relation to the Birth and Death Rates: an Historical Study." Dr John C. M'Vail, Professor Graham Kerr, and Dr A. K. Chalmers took part in the discussion which followed, and Dr Brownlee received the thanks of the Meeting on the motion of the Chairman.

Both papers were communications from the Sanitary and Social Economy Section.

5. Mr David Reid and Mr James F. Martin were appointed to audit the Accounts of the Society.

6. The following gentlemen were declared to have been duly elected to Membership of the Society :—

Honorary Members.

Recommended by the Council.

1. Sir WILLIAM CROOKES, D.Sc., F.R.S., 7 Kensington Park Gardens, London, W.

2. Sir DAVID GILL, K.C.B., LL.D., D.Sc., F.R.S., F.R.A.S., 34 De Vere Gardens, Kensington, London, W.

3. ARCHIBALD BYRON MACCALLUM, M.A., M.D., Ph.D., D.Sc., LL.D., F.R.C.S., F.R.S., Professor of Physiology and Physiological Chemistry in the University of Toronto, 59 St. George Street, Toronto, Canada.

Ordinary Members.

1. Mr T. A. BOYD, Shettleston Iron Works, Glasgow. Recommended by Dr George Neilson, Mr J. T. T. Brown, and Mr Wm S. M'Kechnie.

2. Mr THOMAS H. BRYCE, M.A., M.D., Lecturer on Anatomy, University of Glasgow, 2 Granby Terrace, W. Recommended by Professor Bower, Professor Graham Kerr, and Dr Freeland Fergus.

3. Mr D. L. FORGAN, Writer, 302 Buchanan Street. Recommended by Dr George Neilson, Mr J. T. T. Brown, and Mr J. V. Stevenson.

4. Professor D. NOËL PATON, M.D., B.Sc., F.R.C.P.E., University of Glasgow, 4 University Gardens. Recommended by Mr Charles R. Gibson, Professor M'Kendrick, and Dr Freeland Fergus.

5. Mr T. H. WEIR, M.R.A.S., 64 Partickhill Road, Glasgow. Recommended by Dr George Neilson, Mr James MacLehose, and Dr Freeland Fergus.

7. This Minute was read by the Secretary and approved by the Meeting, and the Chairman authorised to sign it when it should be engrossed in the Minute Book.

OFFICE-BEARERS

OF THE

Royal Philosophical Society of Glasgow.

SESSION 1907-1908.

President.

FREELAND FERGUS, M.D., F.R.S.E., F.F.P.S.G.

Vice-Presidents.

* HENRY A. MAVOR, M.Inst. C.E.
JOHN MANN, Jun., M.A., C.A.
WILLIAM SNODGRASS, M.A., M.B., C.M., F.F.P.S.G.

Honorary Vice-Presidents.

THE RIGHT HON. LORD KELVIN, O.M., G.C.V.O., LL.D., D.C.L., F.R.S., Foreign Associate of the Institute of France, President R.S.E., and Member of the Prussian Order *Pour le Mérite.*
Professor JOHN GRAY M'KENDRICK, M.D., LL.D., F.R.S., F.R.S.E., F.R.C.P.E.
Professor JOHN FERGUSON, M.A., LL.D., F.R.S.E., F.C.S., F.S.A., F.S.A.(Scot.)
EBENEZER DUNCAN, M.D., F.F.P.S.G.
THE RIGHT HONOURABLE LORD BLYTHSWOOD, LL.D., D.L.
Professor ARCHIBALD BARR, D.Sc., M.Inst. C.E.
DAVID MURRAY, M.A., LL.D., F.S.A.

JAMES KNIGHT, M.A., D.Sc., F.R.S.E., *Hon. Librarian.*
JOHN MANN, C.A., *Hon. Treasurer.*
Professor PETER BENNETT, *Secretary.*

Presidents of Sections.

ALEXANDER GARDNER, *Architectural Section.*
J. T. T. BROWN, *Historical and Philological Section.*
JAMES R. MOTION, *Sanitary and Social Economy Section.*
THOMAS JONES, M.A., *Economic Science Section.*
SAM MAVOR, *Geographical and Ethnological Section.*
R. F. MUIRHEAD, D.Sc., *Mathematical and Physical Section.*
Prof. F. O. BOWER, *Biological Section.*

Other Members of Council.

*Prof. L. BECKER, Ph.D.
*GEORGE BARCLAY.
*J. J. SPENCER.
*WM. FRASER.
Prof. DUDLEY J. MEDLEY, M.A.
JOHN M'KELLAR.
Sir JOHN STIRLING-MAXWELL, Bart.
Prof. J. GRAHAM KERR, M.A.
GEORGE NEILSON, LL.D.
Prof. THOMAS GRAY, D.Sc., Ph.D.
CHARLES R. GIBSON.

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* *Retire by rotation in April, 1908.*

OFFICE-BEARERS OF SECTIONS, 1907-1908.

Architectural Section.

Alexander Gardner, Architect, *President.*

Alexander Cullen, F.R.I.B A., Architect,
Samuel Smith, Clerk of Works, } *Vice-Presidents.*

Robert Miller, F.R.I.B.A., I.A., Architect, *Hon. Secy.*, 58 Renfield St.

Alex. Davie, I.M., Measurer, *Hon. Treasurer*, 219 St. Vincent Street.

Honorary Members of Council.

Campbell Douglas, F.R.I.B.A., I.A., Architect.

William Howatt, F.S.I., I.M., Measurer.

R. A. Macgilvary, Plasterer.

Ninian Macwhannell, F.R.I.B.A., I.A., Architect.

R. D. Sandilands, F.R.I.B.A., I.A., Architect.

William Meikle, Junr., Glass Stainer.

Members of Council.

Andrew Black, F.R.I.B.A., I.A., Architect.

James Davidson, F.R.I.B.A., I.A., Architect.

David M'Bean, Architect.

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SCOTLAND.

Aberdeen—
- Philosophical Society, 147 Union Street.

Alnwick—
- Berwickshire Naturalists' Club, W. J. Bolam, Berwick-on-Tweed, *per* George Bolam.

SCOTLAND—*continued.*

Edinburgh—
- Advocates' Library.
- Botanical Society of Edinburgh, Royal Botanic Garden.
- Geological Society, 5 St Andrew Square.
- Highland and Agricultural Society of Scotland, 3 George IV. Bridge.
- Royal Physical Society, 1 India Buildings.
- Royal Scottish Geographical Society, Queen Street.
- Scottish Meteorological Society, 122 George Street.
- Royal Scottish Society of Arts, 117 George Street.
- Royal Society, The Mound, Princes Street.

Glasgow—
- Archæological Society, 88 West Regent Street.
- Baillie's Institution Free Library.
- Faculty of Physicians and Surgeons of Glasgow, 242 St Vincent Street.
- Geological Society, 207 Bath Street.
- Glasgow University—
- Glasgow and West of Scotland Technical College Library.
- Institute of Accountants and Actuaries in Glasgow.
- Institution of Engineers and Shipbuilders in Scotland, 207 Bath Street.
- Mitchell Library, Miller Street.
- Natural History Society of Glasgow, 207 Bath Street.
- Stirling's Public Library, Miller Street.
- West of Scotland Iron and Steel Institute.

Hamilton—
- Mining Institute of Scotland.

SWEDEN.

Upsala—
- Royal University Library.

Stockholm—
- Kongliga Svenska Vetenskaps-Akademie.

TASMANIA.

Hobart—
- Royal Society of Tasmania.

UNITED STATES.

Albany—
- New York State Department of Health.
- New York State Library.

Austin (Texas)—
- Texas Academy of Science.

Baltimore—
- Johns Hopkins University.

Berkeley (Cal.)—
- University of California. . Exchange Department University Library.

UNITED STATES—*continued.*

Boston—
  American Academy of Arts and Sciences.
  Boston Society of Natural History.
  Library of the City of Boston, Copley Square.

Buffalo—
  Buffalo Society of Natural Sciences.

Chicago—
  Western Society of Engineers.

Colorado Springs—
  Coburn Library, Colorado College.

Columbia (Mo.)—
  University of Missouri. The Librarian.

Davenport (Iowa)—
  Academy of Natural Sciences.

Denver—
  Colorado Scientific Society.

Des Moines (Iowa)—
  Iowa Geological Survey.

Indianapolis (Ind.)—
  Indiana Academy of Science.

Lawrence (Kansas)—
  Kansas University.
  Columbus.
  Ohio State University.

Madison (Wis.)—
  Madison Geological and Natural History Society.
  Washburn Observatory.

Mount Hamilton (Cal.)—
  Lick Observatory.

Newhaven (Conn.)—
  Connecticut Academy of Arts and Sciences.
  Yale University.

New York—
  American Geographical Society, 15 Eighty-first Street.
  American Museum of Natural History, Seventy-seventh Street, and Central Park West.
  American Society of Civil Engineers, 220 West Fifty-seventh Street.
  New York Public Library, 40 Lafayette Place.
  New York Academy of Sciences Library, Seventy-Seventh Street, Central Park, West.
  School of Mines, Columbia College. The Associate Editor.

Philadelphia—
  Academy of Natural Science of Philadelphia.
  The Associated Alumni of the Central High School of Philadelphia.
  American Pharmaceutical Association.

UNITED STATES—*continued.*

Philadelphia—
- American Philosophical Society. The Hon. Secretaries, 104 South Fifth Street.
- Franklin Institute, 15 South Seventh Street.
- Numismatic and Antiquarian Society of Philadelphia.
- Wagner Free Institute of Science, corner of Seventeenth Street and Montgomery Avenue.

Rochester (N.Y.)—
- Rochester Academy of Science. Corresponding Secretary.

St. Louis (Mo.)—
- Academy of Science of St Louis, 3817 Olive Street.
- Missouri Botanical Garden.

Salem—
- American Association for the Advancement of Science.

San Francisco (California)—
- California Academy of Sciences.

Topeka (Kansas)—
- Kansas Academy of Science.

Washington—
- Bureau of Education (Department of the Interior).
- Bureau of Ethnology.
- Smithsonian Institution.
- United States Geological Survey.
- United States National Museum (Department of the Interior).
- United States Naval Observatory.
- United States (Department of Agriculture).
- Volta Bureau.

LIST OF PERIODICALS.

(Those received in exchange are indicated by an "a").

WEEKLY.

Academy.
Architect.
Athenæum.
British Journal of Photography.
Builder.
Building News.
Chemical News.
Comptes Rendus.
County and Municipal Record.
*a*Deutsche Kolonialzeitung.
Dingler's Polytechnisches Journal.
Electrical Review.
Electrician.
*a*Engineering.
English Mechanic.
*a*Illustrated Official Journal of Abridgments of Patents.
*a*Journal of the Society of Arts.
Journal of Gas Lighting.
Lancet.
La Nature.
Nature.
Notes and Queries.
*a*Pharmaceutical Journal.
*a*Publishers' Circular.
Science.
Scientific American and Supplement.
Zeitschrift für Angewandte Chemie.

FORTNIGHTLY.

Annalen der Chemie (Liebig's).
*a*Berichte der Deutschen Chemischen Gesellschaft.
Journal de Pharmacie et de Chimie.
Journal für Praktische Chemie.

MONTHLY.

*a*American Chemical Journal.
American Journal of Science.
Analyst.
Annalen der Physik.
Annales de Chimie et de Physique.
Annales de l'Institut Pasteur.
Annales des Mines.
Annales des Ponts et Chaussées.
Annales des Sciences Naturelles—Botanique.
Annales des Sciences Naturelles—Zoologie.
Annals and Magazine of Natural History.
Antiquary.
Beiblätter zu den Annalen der Physik.
Bulletin de la Société Chimique de Paris.
Bulletin de la Société Géologique de France.
Bulletin de la Société Industrielle de Mulhouse.
Bulletin de la Société d'Encouragement pour l'Industrie Nationale.
Bulletin of the American Mathematical Society.
*a*Canadian Entomologist.

MONTHLY—*continued.*

*a*Engineering Review.
*a*Electrical Magazine.
*a*Geographical Journal.
Geological Magazine.
*a*Johns Hopkins University Circulars.
Journal of Botany.
*a*Journal of the Chemical Society.
Journal of Education.
*a*Journal of the Franklin Institute.
*a*Journal of the Royal Photographic Society.
*a*Journal of the Society of Chemical Industry.
*a*Journal of the Western Society of Engineers.
Library Association Record.
Library World.
London, Edinburgh, and Dublin Philosophical Magazine.
Petermanns Mitteilungen.
Polytechnic Bibliothek.
*a*Proceedings of the Royal Society of London.
*a*Proceedings of the Society of Biblical Archæology.
Revue Universelle des Mines.
*a*Royal Astronomical Society's Monthly Notices.
Science Abstracts.
*a*Science of Man.
*a*Scottish Geographical Magazine.
*a*Sitzungsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin.
*a*Tijdschrift van het Koninklijk Nederlandoch Aardrijkskundig Genootschap.
Zoologist.
Zeitschrift fur Analytische Chemie.

QUARTERLY.

Annals of Botany.
Annals of Scottish Natural History.
*a*Archives Néerlandaises des Sciences Exactes et Naturelles.
*a*Bulletin of the American Geographical Society.
*a*Bulletin of the Kansas University.
Economic Journal.
Englische Studien.
Jahrbuch über die Fortschritte der Mathematik.
Journal of Anatomy and Physiology.
*a*Journal of the Anthropological Institute of Great Britain.
*a*Journal of Manchester Geographical Society.
*a*Journal of the Royal Institute of British Architects.
Journal of the Royal Microscopical Society.
*a*Journal of the Royal Statistical Society.
*a*Journal of the Scottish Meteorological Society.
*a*Memorias Y Revista de la Sociedad Científica "Antonio Alzate."
Mind: a Quarterly Review of Psychology and Philosophy.
*a*Proceedings of the American Philosophical Society.
Quarterly Journal of Economics.
Quarterly Journal of Geological Society.
Quarterly Journal of Microscopical Science.
*a*Quarterly Journal of Royal Meteorological Society.
Quarterly Journal of Pure and Applied Mathematics.
Reliquary and Illustrated Archæologist.
Record of Technical and Secondary Education.
Revue Historique.
*a*School of Mines Quarterly.
Scottish Historical Review.
Scientific Roll.

ANNUALLY.

British Journal Photographic Almanac.
Hazell's Annual.
Jahres-Bericht Chemischen Technologie.
Journal of the Royal Agricultural Society of England.
Murray's English Dictionary.
*a*Journal de L'Ecole Polytechnique.
Palæontographica Society's Publications.
Philosophical Transactions, Royal Society of London.
Ray Society's Publications.
Report of the Board of Education.
Statesman's Year Book.
Symons' British Rainfall.
Wright's English Dialect Dictionary.

The LIBRARY and the READING-ROOM are open:—Winter, 9.30 a.m. till 8 p.m. (except Saturdays); Saturdays, till 2 p.m.

Summer (May till October, except during the holidays, from the 11th till 31st July), 9.30 a.m. till 5 p.m.; Saturdays, till 1 p.m.

LIST OF MEMBERS

OF THE

Royal Philosophical Society of Glasgow

FOR 1907-1908.

HONORARY MEMBERS.

(*Limited to Twenty.*)

WITH YEAR OF ELECTION.

FOREIGN.

	Rudolph Albert von Kölliker, Würzburg.	1860
	Professor Ernst Heinrich Hæckel, Jena.	1880
	Professor Georg Quincke, Hauptstrasse 47, Friederichsbau, Heidelberg.	1890

AMERICAN AND COLONIAL.

	Thomas Muir, M.A., LL.D., F.R.S.S., L. and E., Superintendent General of Education, Cape Colony.	1892
5	Archibald Byron Macallum, M.A., M.B.(Tor.), Ph.D.(Johns Hopkins), Sc.D.(Yale), LL D.(Aberd), F.R.S., University of Toronto, 59 St. George Street, Toronto, Canada,	1908

BRITISH.

	Sir Joseph Dalton Hooker, C.B., G.C.S.I., M.D., D.C.L., LL.D., F.R.S., The Camp, Sunningdale.	1874
	The Right Hon. Lord Rayleigh, M.A., D.C.L., LL.D., F.R.S., F.R.A.S., F.R.S.G., Hon. Prof. of Nat. Philosophy in the Royal Institution, London, Terling place, Witham, Essex.	1890
	The Right Hon. Lord Lister, O.M., LL.D., D.C.L., F.R.S., 12 Park crescent, Portland place, London, W.	1895
	Sir Archibald Geikie, LL.D., D.Sc., F.R.S., F.R.S.E., F.G.S., Shepherd's Down, Haslemere, Surrey,	1895
10	Professor Edward Albert Schäfer, LL.D., F.R.S., M.R.C.S., University of Edinburgh.	1902
	Sir William Huggins, K.C.B., D.C.L.Oxon., LL.D.Camb, Pres. R.S, F.R.A.S., etc., 90 Upper Tulse-hill, London, S.W.	1904
	Sir William Ramsay, K.C.B., LL.D., D.Sc., Ph.D., F.R.S., Professor of Chemistry, University College, London, 19 Chester Terrace, Regent's Park, London, N.W.	1904
	Sir William Crookes, D.Sc., F.R.S., 7 Kensington Park Gardens, London, W.,	1908
	Sir David Gill, K.C.B., LL.D., D.Sc., F.R.S., F.R.A.S., 34 De Vere Gardens, Kensington, London, W.,	1908

CORRESPONDING MEMBERS.

With Year of Election.

	Sir Thomas E. Thorpe, Ph.D., F.R.S., F.R.S.E., Principal of the Government Laboratories, Clement's Inn-passage, W.C.	1874
	John Aitken, LL.D., F.R.S., F.R.S.E., Ardenlea, Falkirk.	1883
	Sir James Dewar, M.A., F.R.S., F.R.S.E., M.R.I., Jacksonian Professor of Physics, University of Cambridge, and Professor of Chemistry in the Royal Institution of Great Britain, 1 Scroope terrace, Cambridge.	1883
	Sir Joseph W. Swan, M.A., D.Sc., F.I.C. F.C.S., M.I.Mech.E., Hon.M.I.E.E., F.R.S., Overhill, Warlingham, Surrey,	1883
5	William Milne, M.A., B.Sc., F.R.S.E., Uitenhage, Cape Colony,	1894
	Richard Lodge, M.A., Professor of History in Edinburgh University.	1899
	Edmund J. Mills, D.Sc., LL.D., F.R.S., Emeritus Professor of Technical Chemistry, Glasgow and West of Scotland Technical College, 64 Twyford avenue, West Acton, London, W.	1901
	Arthur Schuster, Ph.D., F.R.S., Victoria park, Manchester,	1901
	W. S. M'Cormick, M.A., LL.D., 2 St Andrew's square, Edinburgh.	1902
10	John George Bartholomew, F.R.S.E., F.R G.S., Geographical Institute, Park road, Edinburgh.	1902
	James Burgess, C.I.E., LL.D., F.R.S.E., Hon. A.R.I B.A., F.R.G.S., 22 Seton place, Edinburgh.	1902
	Francis Elgar, LL.D., F.R.S., F.R.S.E., 18 Cornwall Terrace, Regent's park, London, N.W.	1902
	Frederick Emley, Literary and Philosophical Society of Newcastle-upon-Tyne.	1902
	Professor Cargill G. Knott, D.Sc., F.R.S.E., 42 Upper Gray street, Edinburgh.	1902
15	Principal John Yule Mackay, M.D., LL.D., University College, Dundee.	1902
	Professor John Millar Thomson, LL.D., F.R.S., F.I.C., F.C.S., King's College, and 9 Campden Hill Gardens, London, W.	1902
	Professor Robert Wallace, F.R.S.E, F.L.S., F.C.S., University of Edinburgh.	1902

ORDINARY MEMBERS.

With Year of Entry.

a Denotes Life Members.

	Adam, Stephen, 168 Bath street.	1896
	*a*Adam, Thomas, F.S.I., 27 Union st.	1892
	Adams, John, M.B., 1 Queen's crescent, W.	1902
	Adams, William, Makerstoun, Bearsden.	1891
5	Addison, W. H., Superintendent Mount Florida Deaf and Dumb Institution.	1895
	*a*Agar, Thomas F., Argentine Consul-General, 30 George square.	1896
	Aiken, James, of Dalmoak, 201 West George street.	1905
	Aikman, W. G., 12 Kingsborough gardens, Kelvinside.	1899
	Aiton, Alexander Hamilton, 190 West George street.	1902
10	Alexander, D. M., 5 Derby crescent, Kelvinside.	1887
	*a*Allan, Henry, 2 Park gardens.	1900
	*a*Allan, James A., 25 Bothwell st.	1904
	Allan, James W., M.B., 18 India street.	1900
	Alston, J. Carfrae, 9 Lorraine gard.	1887
15	Anderson, Alexander, 157 Trongate.	1869
	*a*Anderson, Alexander, C.E., Farme Cottage, Rutherglen.	1907
	*a*Anderson, David H., Atlantic Mills, Bridgeton.	1904
	Anderson, James, c/o Anderson & Co., 12 Buchanan street.	1900
	Anderson, James, 168 George street.	1890
20	Anderson, James Scott, Bardowie Castle, Milngavie.	1902
	Anderson, James Spencer, 84 Albert drive, Crosshill.	1901
	Anderson, John, 142 West Nile st.	1884
	Anderson, J. B. Mackenzie, M.B., 8 Buckingham terrace, Hillhead.	1895
	Anderson, R. T. R., 42 Roselea drive.	1889
25	Anderson, Robert, 76 Bath street.	1896

Anderson, Robert, Eastwoodhill, Giffnock. 1900
*a*Anderson, Robert Locke, 233 St Vincent street. 1901
Anderson, Wm, 12 Princes square. 1900
*a*Anderson, William, 133 Wellington street. 1890
30 Anderson, William, J., C.A., 149 West George street. 1906
Andrew, Grant, 12 Woodside terrace. 1900
*a*Andrew, James, 160 West George street. 1900
Angus, Robert, Ladykirk, Monkton, Ayrshire. 1901
*a*Annan, J. Craig, 518 Sauchiehall street. 1888
35 Annandale, Charles, M.A., LL.D., 35 Queen Mary avenue. 1888
Arend, Waldemar, 1 Queensborough gardens. 1904
Arneil, Allan, Stewarton drive, Cambuslang. 1901
*a*Arnot, J. L., 204 Bath street. 1890
Arrol, Theodore A., Torwood Hill, Row, Dumbartonshire. 1902
40 Arrol, Wm. A., Torwoodhill, Row. 1869
*a*Arrol, Sir William, LL.D., Seafield, Ayr. 1900
*a*Arthur, Andrew, 78 Queen street. 1902
Arthur, Henry M., C.A., 79 West Regent street. 1908
*a*Arthur, James, 78 Queen street. 1900
45 Arthur, Sir Matthew, Bart., 78 Queen street. 1900

Baird, Allan F., 192 St. Vincent street. 1904
*a*Baird, J. G. A., M.P., Wellwood, Muirkirk. 1892
*a*Balfour, Alexander, Kelvindare, Kelvinside. 1900
Balfour, John A., F.R.Hist.S., Kelvindare, Kelvinside, Glasgow. 1907
50 Ballantine, George, jun., 100 Union street. 1897
Ballantyne, John H., 212 Bath st. 1904
Bannatyne, Dugald, C.A., 191 West George street. 1907
Barbour, Wm, M.B., C.M., 3 Edelweiss terrace, Partick. 1900
Barclay, A. J. Gunion, M.A., F.R.S.E., High School. 1893
55 Barclay, A. P., 133 St Vincent street. 1890
Barclay, George, 8 Windsor circus. 1891
Barclay, James, 16 Roxburgh street, Kelvinside. 1871
Barman, Harry D.D., 21 University gardens. 1904
Barnet, John, 73 Robertson street. 1901

60*a*Barr, Archibald, D.Sc., Professor of Civil Engineering and Mechanics in the University of Glasgow, Royston, Dowanhill. 1890
*a*Barr, James, C.E., I.M., F.S.I., 221 West George street. 1883
Barr, Patrick, 51 Bath street. 1902
Barr, Thos, M.D., F.F.P.S.G., 13 Woodside place, W. 1879
Barrett, Francis Thornton, Mitchell Library. 1880
65 Bauermeister, F., 49 Gordon street. 1901
Baxter, John, I.M., 243 St Vincent street. 1901
Baxter, W. R., 36 Sutherland terrace. 1900
Beardmore, W., Parkhead Forge. 1901
Beatson, Sir George T., B.A. (Cantab.), M.D., 7 Woodside cres. 1881
70 Beaumont, Frank, B.A.(Lond.), 1 Princes street, Pollokshields. 1904
Becker, L., Ph.D., Professor of Astronomy in the University of Glasgow, The Observatory. 1895
Beckett, Charles E., M.A., LL.B., 163 St Vincent street. 1903
Beckett, William, M.A., 225 West George street. 1900
Beedle, Peter D. Ridge, 18 Ashton gardens. 1902
75 Begg, Wm, 636 Springfield road. 1883
Beilby, George T., F.R.S., 11 University gardens, Hillhead. 1895
Bell, George, architect, 212 St Vincent street. 1900
*a*Bell, Henry, Mynthurst, Reigate, Surrey. 1876
Bell, Sir James, Bart, 135 Buchanan street. 1877
80*a*Bell, James T., 330 Mansfield road, Nottingham. 1896
*a*Bell, John J., Clyde Cottage, Craigendoran. 1896
*a*Bennett, Professor Peter, ***Secretary***, 207 Bath street. 1900
Bennett, Robert J., Savoy park, Ayr. 1883
Bergius, Walter, C.E., 77 Queen st. 1897
85 Bergius, William M., 14 St. Enoch square. 1907
Berry, R. A., Professor of Chemistry, West of Scotland Agricultural College, 6 Blythswood square. 1906
*a*Biggart, Thomas, 105 West George street. 1900
*a*Bilsland, Sir William, Bart., 28 Park circus. 1888
Binnie, Thomas, Junr., M.A., 3 Park Gate. 1903
90*a*Birkmyre, John, Broadstone, Port-Glasgow. 1900
*a*Bishop, A. Henderson, Thornton hall, Lanarkshire. 1896

Black, J. Albert, Lagarie, Row. 1869
Black, Malcolm, M.D., 5 Canning place. 1880
*a*Black, William Dunn, J.P., The Manor House, Wallington, Surrey. 1901
95 *a*Blackie, J. Alexander, 17 Stanhope street. 1881
*a*Blackie, J. Robertson, North Bank, Dowanhill. 1881
*a*Blackie, Walter W., B.Sc., The Hill House, Helensburgh. 1886
Blackwood, Matthew, Ardmore, Port-Glasgow. 1901
Blair, Alexander, F.S.I., 198 West George street. 1908
100 Blair, William, 24 St Vincent place. 1902
*a*Blyth, Robert, Balvonie, Skelmorlie. 1885
Borthwick, James D., 46 Balshagray avenue, Partick. 1891
*a*Boston, Alexander L., 12 Argyle arcade. 1902
Bottomley, James T., M.A., Hon. LL.D. (Glas.), D.Sc., F.R.S., F.R.S.E., F.C.S., 13 University gardens, Hillhead. 1880
105 Bottomley, Wm, C.E., 15 University gardens. 1880
Bower, F.O., D.Sc., M.A., F.R.S., F.L.S., Regius Professor of Botany in the University of Glasgow, 1 St John's terrace, Hillhead. 1885
Bowers, John, *Depute* Town Clerk, City Chambers. 1904
Boyd, James, Boydston, Lenzie. 1905
Boyd, John, Shettleston Iron-works, near Glasgow. 1873
110 Boyd, T. A., Shettleston iron works, Glasgow. 1908
*a*Boyne, James, 106 West Nile street. 1901
*a*Broadfoot, William R., Inchholme Works, Whiteinch. 1900
Brock, Henry, Auchenheglish, Arden, Dumbartonshire. 1905
Brodie, William, B.L., 77 St Vincent street. 1902
115 Bromhead, Horatio K., F.R.I.B.A., I.A., 18 Kirklee road, Kelvinside. 1901
Brown, Alex., The Craigs, Carmunnock. 1896
Brown, George Arbuckle, M.B., C.M., D.P.H.(Camb.), 180 Hyndland road, Partick. 1900
*a*Brown, Hugh, 5 St John's terrace, Hillhead. 1887
Brown, James, 76 St Vincent street. 1876
120 Brown, John Armour, Moredun, Paisley. 1901
Brown, J. T. T., Kessiebank, Cambuslang. 1902
*a*Brown, Nicol Paton, 22 Belhaven terrace. 1901
Brown, Richard, Writer, 166 St Vincent street. 1895
Brown, Robert, 19 Jamaica street. 1882
125 *a*Brown, Wm Stevenson, 67 Washington street. 1886
*a*Brown, William, 165 West George street. 1892
Brown, Robert, B.Sc., 45 Washington street. 1893
Brownlee, Jno., M.D., Glasgow Fever Hospital, Belvidere. 1902
Brownlie, John Douglas, M.B., Ch.B., L.D.S., 10 Brandon place. 1901
130 Bruce, Alex., Clyne House, Pollokshields. 1901
Bruce, David, M.A., LL.B., 141 West George street. 1897
Bryce, John, Assoc. M.Inst.C.E., Maxwell street, Partick. 1900
Bryce, Thomas H., M.A., M.D., 2 Granby terrace, W. 1908
*a*Buchanan, Andrew, Dunfillan, Helensburgh. 1902
135 *a*Buchanan, A. W. G., Parkhill, Polmont, Stirlingshire. 1903
Buchanan, George Douglas, Silverrae, Giffnock. 1901
Buchanan, Peter, 7 Garthland street. 1901
Buchanan, Robert Macneil, M.B., C.M., F.F.P.S.G., 2 Northbank terrace, Kelvinside. 1900
*a*Buchanan, Wm. Enderley, Bearsden. 1886
140 Burnet, John James, A.R.S.A., F.R.I.B.A., 70 University avenue. 1892
Burns, J., M.D., 15 Fitzroy place, Sauchiehall street. 1864
Burns, James, 2 Caird drive, Partick. 1905
*a*Burrell, Wm, 54 George square. 1900
Burton, William L., 6 Richmond crescent, Glasgow. 1899
145 Burr, Robert A., M.A., B.Sc., 77 Sinclair drive, Langside. 1904

Caird, Robert, LL.D., F.R.S.E., 56 Esplanade, Greenock. 1898
*a*Caldwell, George B., Scotia Leather Works, Boden street. 1892
Caldwell, James, M.P., 6 Newton place. 1900
Cameron, Sir Hector C., M.D., Professor of Clinical Surgery, University of Glasgow, 18 Woodside crescent. 1873
150 *a*Campbell Arch., Springfield quay. 1895
Campbell, James Murdoch, 147 George street. 1901
Campbell, John, 49 St Andrew's drive, Pollokshields. 1901

*a*Campbell, John Ferguson, 15 Montgomerie street, North Kelvinside. 1892

Campbell, John M., F.E.I.S., Sir John Neilson Cuthbertson School, and 14 Royal crescent, Crosshill. 1900

155 Campbell, John MacNaught, C.E., F.Z.S., F.R.S.G.S, 6 Franklin terrace, Dumbarton road. 1883

Campbell, Malcolm, 18 Gordon street. 1894

Campbell, M. Pearce, 9 Lynedoch crescent. 1905

Campbell, Joseph Dawson, 142 West George street. 1903

*a*Campbell, Thomas, Maryhill Iron works. 1894

160 Campbell, The Right Reverend Archibald E., D.D., Bishop's House, Woodside terrace. 1904

Cant, James, Kilmeny, Ardrossan. 1901

Carmichael, Neil, M.D., C.M., F.F.P.S.G., Invercarmel, 177 Nithsdale road, Pollokshields. 1873

Carrick, John, 26 Renfield street. 1905

Carson, D. S., C.A., J.P., St. Oswalds, Kilmacolm. 1905

165 Carswell, John, F.F.P.S.G., L.R.C.P.Ed., 5 Royal crescent, W. 1903

Carver, Thomas, A.B., B.Sc., D.Sc., C.E., 8 Windsor quadrant, Kelvinside. 1890

*a*Cayzer, Sir Charles W., M.P., 109 Hope street. 1886

Chalmers, A. K., M.D., D.P.H. (Camb.), 7 Buckingham terrace. 1892

Chalmers, P. MacGregor, I.A., F.S.A.Scot., 95 Bath street. 1891

170 *a*Chisholm, Sir Samuel, Bart., LL.D., 20 Belhaven terrace. 1890

Christie, James Roberton, M.A., LL.B., 3 Gloucester place, Edinburgh. 1903

*a*Christie, Henry W., 46 West George street. 1892

Christie, John, Turkey-red Works, Alexandria, Dumbartonshire. 1868

*a*Christison, George, 13 Cambridge drive. 1897

175 Chrystal, W. J., F.I.C., F.C.S., Shawfield Works, Rutherglen. 1882

Clanachan, John, 4 Lloyd street, Dennistoun. 1900

Clapperton, Alan E., 91 West Regent street. 1905

Clark, John, M.A., 24 Park gardens, N. Broomhill. 1897

Cleghorn, Alexander, 14 Hatfield drive, Kelvinside. 1904

180 *a*Cleland, John, M.D., LL.D., D.Sc., F.R.S., Professor of Anatomy in the University of Glasgow. 1884

*a*Coats, Archibald, Woodside, Paisley. 1900

Coats, John J., M.A., 27 Woodside place. 1900

*a*Coats, Sir Thomas Glen, Bart., M.P., Ferguslie Park, Paisley. 1905

Coghill, William C., 24 Douglas street. 1873

185 Colquhoun, Walter, M.A., M.B., C.M., 7 Stanley street, W. 1900

*a*Colville, Archibald, The Moorings, Motherwell and Arngomery, Kippen. 1905

Colville, James, M.A., D.Sc., 14 Newton place. 1885

Colville, David, Jerviston House, Motherwell. 1905

*a*Combe, James Russell, 10 Camphill avenue, Langside. 1895

190 *a*Connell, Charles Broadfoot, Scotstoun Shipbuilding Yard, Whiteinch. 1900

*a*Connell, James G., 44 St Enoch's square. 1900

Cook, William, 77 St Vincent street. 1900

Cooper, David, Woodend, Giffnock. 1905

Copland, W. R., 146 West Regent street. 1908

195 Core, Wm, M.D., Stobhill Hospital, Springburn. 1891

Cormack, J. D., B.Sc., Prof. of Mechanical Engineering, University College, Gower street, London, W.C. 1898

Coubrough, A. Sykes, Blanefield, Stirlingshire. 1869

Coulson, W. Arthur, 47 King street, Mile-end. 1888

Couper, James, Craigforth House, Stirling. 1862

200 Couper, Sinclair, Moore Park Works, Helen street, Govan. 1896

Cowie, Archibald, 20 Blythswood square. 1900

Craig, T. A., C.A., 139 St Vincent street. 1886

*a*Crawford, R. C., 12 Derby crescent, Kelvinside. 1902

Cree, H. G., 37 West Nile street. 1908

205 Cree, Thomas S., LL.D., 21 Exchange square. 1869

*a*Crookston, George B., 188 St Vincent street. 1900

Crosbie, Warren, B.L., 141 St. Vincent street. 1904

Cross, Alexander, M.P., 14 Woodlands terrace. 1887

*a*Crum, Walter G., Dalnotter house, Old Kilpatrick. 1895

210 Crum, William G., Auchenbowie, Bannockburn. 1896
*a*Cullen, Alexander, F. R. S. E., F. R. I. B. A., 3 Blythswood square. 1901
*a*Curphey, Wm Salvador, 7 Derby crescent, Kelvinside. 1883
Currie, John, 31 Westbourne gardens. 1905

Dalrymple, James D. G., F.S.A., Meiklewood, Stirling. 1902
215*a*Daly, James, 2 Prince's gardens. 1898
*a*Dalziel, T. Kennedy, M.B., C.M., 196 Bath street. 1896
Dansken, A. B., 109 St. Vincent street. 1877
Davidson, David, 7 Bute Mansions, Hillhead. 1905
Davie, Alexander, 220 St Vincent street. 1906
220 Dewar, David, 362 St George's road. 1903
Dick, Thomas, 166 St Vincent street. 1901
Dickie, John S., 30 Renfield street. 1900
*a*Dixon, James S., Fairleigh, Bothwell. 1900
Dixon, Walter, Derwent, Kelvinside gardens. 1893
225 Dixon, W. Macneile, M.A., Litt.D., Professor of English Language and Literature in the University of Glasgow, 2 South Park terrace, Hillhead. 1906
Dobbie, A. B., M.A., 24 West Cumberland street. 1885
*a*Dobbie, Robert, Beechmount, Larbert. 1900
*a*Donald, James Addie, 12 Waterloo street. 1900
Donald, John, 162 West Princes street. 1872
230 Donald, William, J. A., Devonport, Greenfaulds, Cumbernauld. 1877
*b*Douglas, Campbell, I.A., F.R.I.B.A., 226 St. Vincent street. 1870
Douglas, James R., Broxtowe, Newark drive, Pollokshields. 1907
Douglas, William M., 155 North street. 1903
Downie, J. Walker, M.B., C.M., F.F.P.S.G., 4 Woodside crescent. 1901
235 Downie, Thomas, Hydepark Foundry. 1886
*a*Dreghorn, David, Greenwood, Pollokshields. 1896
*a*Duncan, Eben., M.D., C.M., F.F.P.S.G., Queen's Park house, Langside road, *Hon. Vice-President.* 1873
Duncan, Hugh, M.A., LL.B., 54 West Nile street. 1895
Duncan, J. A., Aston, Bridge of Allan. 1896
240*a*Duncan, Robert, Whitefield Works, Govan. 1890
Dunlop, David John, Inch Works, Port-Glasgow, and 198 Bath street. 1900
Dunlop, John, F.E.I.S., headmaster, Quarry Brae Public School, Parkhead. 1900
Dunlop, John, M.D., 1 Somerset place. 1900
*a*Dunlop, Sir Nathaniel, 25 Bothwell street. 1870
245*a*Dunlop, Thomas, 70 Wellington street. 1902
Dunn, Robert Hunter, 4 Crown terrace, Dowanhill. 1878
Dyer, Henry, M.A., D.Sc., C.E., 8 Highburgh terrace, Dowanhill. 1883

Eadie, George, 405 Mathieson street. 1908
*a*Edington, George Henry, M.D., M.R.C.S. (Eng.), F.F.P.S.G., 20 Woodside place. 1896
250 Edmiston, John C., M.D., F.F.P.S.G., 24 Wilton gardens. 1901
*a*Edwards, John, 4 Great Western terrace, west. 1883
Elliott, Joseph J., City Chambers. 1901
Ellis, David, D.Sc. (Lond.), Ph.D. (Marburg), Lecturer in Botany, Technical College, Glasgow, 13 Princes street, Pollokshields. 1905
Erskine, Jas, M.A., M.B., L.F.P.S.G., 351 Bath street. 1886
255 Ewan, Thomas, M.Sc., Ph.D., Wester Auchinloch Farm, Lenzie. 1901
Ewing, James C., Brighton House, Shettleston. 1902
*a*Ewing, Wm, 45 Renfield street. 1883
*a*Faill, John, 7 Winton drive, Kelvinside. 1901
Fairweather, Wallace, C.E., 62 St. Vincent street. 1880
260 Falconer, John M., Broomhill road, Partick. 1906
Falconer, Patrick, 13 Sutherland street, Hillhead. 1876
*a*Farquhar, Jas T., 47 Hope street. 1901
Farquhar, Wm R., St Malo, Kilmalcolm. 1892
Farrelly, John, 25 Elmbank cres. 1901
265 Fawsitt, Charles A., 9 Foremount terrace, Partick. 1879
*a*Fergus, Freeland, M.D., F.R.S.E., F.F.P.S.G., *Hon. Secy.*, 22 Blythswood sq. 1887
Fergus, James, 58 York street. 1901
*a*Fergus, Oswald, D.D.S., L.D.S., F.R.S.E., 12 Clairmont gardens. 1896

Ferguson, Alexr., 164 Howard st. 1901
270*a*Ferguson, David, Glenholm, Port-Glasgow. 1901
Ferguson, Fergus, 20 Royal terrace, West. 1900
Ferguson, George, 130 Bishop street, Port Dundas. 1904
*a*Ferguson, John, M.A., LL.D., F.R.S.E., Professor of Chemistry, University of Glasgow, *Hon. Vice-President.* 1869
Ferguson, John A., Kilmeny, Kirklee, Glasgow. 1905
275 Ferguson, John Forbes, 166 St Vincent street. 1895
Findlay, Joseph, Clairmont, Winton drive, Kelvinside. 1873
Fleming, Dr Robert H., 19 Newton street, Charing cross. 1901
*a*Fleming, E. Brown, Lochanbrae, by Garelochhead. 1900
*a*Fleming, Sir James, 136 Glebe st. 1880
280*a*Fleming, John, 241 St Vincent st. 1900
Fleming, John T., M.A., 129 Bath street. 1908
Flower, Collingwood, Balyward house, Torrance. 1901
Forgan, D. L., 302 Buchanan street. 1908
Foster, W. A., St Catherines, Newlands road, Langside. 1899
285 Fotheringham, T. B., 52 Barrland street, Maxwell road. 1889
*a*Fowler, John, 164 St. Vincent street. 1880
Fraser, Melville, 31 St Vincent place. 1890
*a*Fraser, Thomas Smellie, F.S.I., 209 St Vincent street. 1900
*a*Fraser, Wm, F.S.I., 209 St Vincent street. 1900
290*a*French, Thomas, 1 Kelvinside ter. 1897
Frew, Alex., C.E., Assoc. M. Inst. C.E., 216 West George street 1876
*a*Frew, William, Ph.D., c/o H. Whiteway, Esq., The Orchards, Whimple, Devon. 1898
Fryers, Arthur John, 22 Bath street, Largs. 1899
Fullarton, Professor Robert, M.A., M.B., F.F.P.S.G., 272 Bath st. 1903
295*a*Fullerton, Robt., M.D., 24 Newton place. 1896
Fulton, James, The Glen, Paisley. 1897
Fulton, James, 33 Hamilton drive, Hillhead. 1902
Fyfe, A. Peden, 124 St Vincent st. 1900
Fyfe, Henry B., 115 St Vincent st. 1892
300 Fyfe, John W., F.S.I., 221 West George street. 1905

*a*Gairdner, C. D., C.A., 115 St Vincent street. 1886
Galbraith, John Alexander, 28 Belhaven terrace. 1902
Galbraith, Peter, 4 Beaumont Gate, Dowanhill. 1889
Galbraith, Walter M., 7 Holyrood crescent. 1893
305 Galloway, T. Lindsay, C.E., 175 West George street. 1881
Galt, Professor Hugh, B.Sc., M.B., C.M., F.F.P.S.G., D.P.H.(Camb.), 14 Berkeley terrace, W. 1900
Gardiner, F. C., 24 St. Vincent place. 1907
Gardiner, James, Belleville, Hatfield drive, Kelvinside. 1908
Gardiner, William G, 4 Buckingham terrace, Glasgow. 1907
310 Gardner, Alexander, Architect, 134 Bath street. 1906
Gardner, Daniel, 36 Jamaica street. 1869
Gardner, John, 146 Trongate. 1901
Gardner, John R., 33 Huntly gardens, Kelvinside. 1900
*a*Garrett, Geo., Dunbeth lodge, Coatbridge. 1901
315*a*Garrow, James R., 6 Pollok road. 1890
*a*Garroway, John, 694 Duke st. 1875
Gemmill, James Fairlie, M.A., M.D., 21 Endsleigh gardens. 1901
Gemmill, William, 140 Woodstock avenue, Shawlands. 1903
Gibson, Charles R., Lynton, Mansewood, by Pollokshaws. 1895
320 Gibson, James, M.A., Head Master, Woodside Public School. 1905
Gillies, F. H., Thornly Park, Potterhill, Paisley. 1905
*a*Gillies, William, 23 University gardens. 1901
Gillies, W. D., 17 Royal Exchange square. 1872
Glaister, John, M.D., F.F.P.S.G., D.P.H. (Camb.), F.R.S.E., F.C.S., &c., Professor of Forensic Medicine and Public Health, University of Glasgow, 3 Newton place. 1879
325*a*Glaister, Joseph Newbigging, M.B., C.M., 4 Grafton place. 1900
*a*Glen, Lawrence, 153 St Vincent st. 1900
*a*Glen, Robert, Carlston, Kelvinside. 1901
Goldie, James, 52 St Enoch square. 1883
Goodwin, Robert, C.E., 3 Lynedoch street. 1875
330 Goold, James B., Bank of Scotland, Trongate. 1902
Gordon, H. E., Aikenhead House, Cathcart. 1906
*a*Gordon, James, Stonebyres, 14 Aytoun road, Pollokshields. 1901
*a*Gourlay, Charles, B.Sc., A.R.I.B.A., Professor of Architecture, Glasgow Technical College, 30 Hamilton drive, Hillhead. 1900

Gourlay, Robert, LL.D., 5 Marlborough terrace. 1904

335 Gow, Leonard, 45 Renfield street. 1889

Gow, Leonard, jun., 45 Renfield street 1884

Gow, Robert, 3 Victoria circus, Dowanhill gardens. 1860

Graham, Sir John Hatt Noble, Larbert House, Stirlingshire. 1900

*a*Graham, Robert, 108 Eglinton street. 1888

340 *a*Graham, William, B.L., 198 West George street. 1885

*a*Graham, William, C.A., 6 Royal crescent, W. 1900

Graham, Wm Edward Auld, 7 Royal Bank place. 1900

Grant, Rev. James Bell, B.D., 113 Hill street, Garnethill, St. Stephen's Parish Church. 1903

Graves, John William, Hydropathic, Kilmalcolm. 1901

345 Gray, Albert A., M.D., 14 Newton terrace. 1903

Gray, Andrew, LL.D., F.R.S., Professor of Natural Philosophy in Glasgow University. 1899

*a*Gray, Thomas, D.Sc., Ph.D., F.I.C., F.C.S., Professor of Technical Chemistry, Glasgow Technical College. 1904

*a*Gregory, Professor J. W., D.Sc, F.R.S., Glasgow University. 1904

Green, George, J.P., 40 Balshagray avenue, Partick. 1900

350 Greer, Thomas Arthur, Fairfield works, Govan. 1901

Greig, James R., Ravenswood, Crosshill. 1897

Grier, R. P., 7 Royal Bank place, Buchanan street. 1901

Grieve, W. Weir, 6 Bowmont terrace, Kelvinside. 1905

Gumprecht, John, 6 Park quadrant. 1900

355 Gunn, John, B.L., 233 St Vincent street. 1901

Guthrie, David Wm., 166 Buchanan street. 1900

Guy, Robert, 120 West Regent street. 1905

Hall, Colonel Peter Wishart, V.D., Arisaig, Craigendoran, Helensburgh. 1901

*a*Hamilton, John, I.A., 212 St Vincent street. 1885

360 Harington-Stuart, R. E. S. (Colonel), Torrance, East Kilbride, N.B. 1900

Harrington, John C., 3a So. Hanover street. 1901

*a*Harrington, J. P., Broadfield, Port-Glasgow. 1900

Harris, F. W., 32 Kyle Park, Uddingston. 1900

Harrison, John, J.P., 7 Granby ter. 1900

365 Harvey, William Ure, Norman Hurst, Bearsden. 1896

*a*Henderson, Andrew, 15 Cadogan st. 1906

*a*Henderson, A. P., 20 Newton place. 1880

Henderson, Francis, St Vincent pl. 1901

Henderson, George G., M.A., D.Sc., F.I.C., F.C.S., Professor of Chemistry, Glasgow and West of Scotland Technical College, 204 George street. 1883

370 Henderson, John, Reigate, Surrey. 1890

*a*Henderson, Thomas, 1 Lancaster crescent, Kelvinside. 1900

Henderson, Thomas Beath, M.D., 25 Lansdowne crescent. 1899

*a*Henderson, William, 15 Cadogan street. 1873

Hendry, Geo. Scott, 310 St. Vincent street. 1895

375 Henry, R. W., 21 Oakfield terrace, W. 1875

Hewat, Andrew, J.P., 9 Berkeley terrace. 1906

Higgins, Henry, jun., 248 West George street. 1878

Hill, Thomas N., F.S.I., 180 Hope street. 1905

Hinshelwood, James, M.A., M.D., 26 Woodside place. 1896

380 Hinshelwood, Thomas, Kennyhill house, Dennistoun. 1903

*a*Hope, James, Dean house, Lenzie. 1898

Horne, Joseph, M.B., C.M., 45 Windsor terrace. 1900

*a*Houldsworth, J. H., Rozelle, Ayr. 1900

*a*Houldsworth, Wm Thos, Clerk in Holy Orders, 1 Mansfield street, Portland place, London, W. 1901

385 Houstoun, Wm Henry, Hillcrest, Cambridge drive. 1895

Howat, William, 37 Elliot street. 1885

*a*Hunt, John, Milton of Campsie. 1881

*a*Hunter, Richard H., Glentyan, Kilbarchan, Renfrewshire. 1900

Hunter, Robert, 72 Waterloo street. 1901

390 Hunter, Walter K., M.D., 7 Woodside place. 1899

*a*Hunter, Wm S., 70 Robertson st. 1889

Hutchison, John C., 8 Lansdowne crescent. 1900

Hutchison, William, LL.B., 208 West George street. 1908

*a*Hyslop, William, of Bank, New Cumnock. 1901

395 Inglis, John, LL.D., Pointhouse Shipyard. 1895

*a*Inglis, Malcolm, 5 Lancaster cres., Glasgow, W. 1900

Inglis, R. A., Culrain, Bothwell, 1889
Innes, Gilbert, 16 Kirklee road, Kelvinside. 1900
Inverclyde, The Right Hon. Lord, 30 Jamaica street. 1905
400*a*Irons, Joseph Jones, Summerlea, Kilcreggan. 1902

Jack, George, 2 Wilton gardens, Kelvinside. 1905
Jack, William Robert, M.D., 43 Lansdowne crescent. 1899
*a*Jack, William, M.A., LL.D., Professor of Mathematics in the University of Glasgow. 1881
*a*Jackson, Harold D., Easterhill, Helensburgh. 1902
405 Jackson, Robert, 16 Dixon avenue, Crosshill. 1902
Jackson, Thomas, C.A., 24 George square. 1900
Jamieson, Andrew, F.R.S.E., M.Inst.C.E., M.Inst.E.E., etc., 16 Rosslyn terrace, Kelvinside. 1881
Jenkins, James Graham, Airedale, Cambuslang. 1901
Johnston, Alex., M.D. (Glasgow), D.P.H. (Camb)., Ruchill Hospital. 1900
410 Johnston, David, 160 West George street. 1891
Johnston, William G., Anchor Chemical Works. 1901
Jones, Thomas, M.A., Anwylfan, East Kilbride. 1906
Jubb, John, B.L., 190 West George street. 1902

Kay, Arthur, J.P., Tregortha, Winton drive. 1904
415 Kay, Cathcart, 77 St Vincent street. 1900
Kay, Thomas, M.B., C.M., 5 Rosebery terrace. 1899
Kean, James, 31 Scotia street, Garnethill. 1888
Kedie, Robert, 11 Eglinton drive, Kelvinside. 1905
*a*Kelly, Alexander, 100 Hyde Park street. 1901
420*a*Kelly, A. Brown, M.D., D.Sc., 26 Blythswood square. 1908
Kelly, Hugh, M.D., Catrine Bank, Shields road, Pollokshields. 1898
Kelly, James K., M.D., F.F.P.S.G., Park villa, Queen Mary avenue, Crosshill. 1889
Kelly, John Davidson, M.A., Stanley house, Bridge-of-Allan. 1901
Kemp, Wm (Alexander, Fergusson, & Co., Ltd), Ruchill, Maryhill. 1898
425*a*Kennedy, Alexander, Kenmill House, Bothwell. 1902
Kennedy, James, 43 Greendyke street. 1889
Kennedy, John, Airdrie. 1904
*a*Kennedy, Moses Hunter, 217 West George street. 1901
*a*Kennedy, William, 13 Victoria crescent, Dowanhill. 1900
430*a*Ker, Charles, M.A., C.A., 115 St Vincent street. 1885
*a*Ker, Wm, 1 Windsor terrace, Kelvinside, West. 1874
Kerr, John G., M.A., LL.D., 15 India street. 1878
Kerr, J. Graham, M.A., Professor of Zoology, University of Glasgow, 12 Oakfield terrace, Hillhead. 1904
Kerr, Thomas, 8 Dungoyne gardens, Maryhill. 1908
435 Kerr, William, 260 West George street. 1902
Kidston, Geo. J., Finlaystone, Langbank. 1900
Kidston, J. B., 50 West Regent street. 1905
*a*Kidston, William H., 81 Great Clyde street. 1900
*a*Kiep, Johannes N., Imperial German Consul, 137 West George street. 1900
440*a*King, Chas M., Antermony house, Milton of Campsie. 1900
King, Sir James, Bart, LL.D., of Campsie, 115 Wellington street. 1855
King, John, 17 Queen's crescent. 1895
King, John C., 21 Newton place. 1898
King, Professor L. A. L., 8 Ardgowan terrace, Sandyford. 1905
445 King, Robert, 115 Wellington st. 1905
Kirk, Rev. Edward Bruce, E.U. Manse, Barrhead. 1905
Kirkpatrick, Alexander B., 88 St Vincent street. 1885
Kirkwood, Charles, 67 West Regent street. 1908
Kirkwood, James, Carling lodge, Ibrox. 1890
450 Knight, James, M.A., D.Sc., F.C.S., F.G.S., F.E.I.S., The Shieling, Uddingston. 1893
*a*Knox, David J., 19 Renfield street. 1890
Knox, John, Finnieston School. 1900
*a*Knox, John, 13 Montgomerie quadrant, Kelvinside. 1902

Lackie, W. W., 75 Waterloo street. 1905
455 Laird, John, Royal Exchange Sale Rooms. 1879
Lamb, David, 155 Hyndland road. 1896
Lamberton, Alex., Lylestone, Hamilton drive, Pollokshields. 1900
Lamberton, Andrew, Blairtummock, Easterhouse. 1904

Lamberton, Hugh Alexander, Lylestone, Pollokshields. 1901
460*a*Lamberton, Hugh, Surbiton, 52 Dalziel drive, Pollokshields. 1900
Lambie, Robert, Strathview, Larkhall. 1901
Lamond, Robert, M.A., LL.B., 163 West George street. 1894
Lanchester, W. F., M.A., Den of Gryffe, Kilmacolm. 1908
Lang, William, Crosspark, Partick. 1865
465*a*Langlands, E. W., 131 West Regent street. 1902
*a*Lauder, James, F.R.S.L., Glasgow Athenæum. 1892
*a*Lauder, John, 46 Gordon street. 1894
Laughland, David, Linwood House, Linwood, Renfrewshire. 1901
Laurie, Malcolm, B.A., D Sc., F.L.S., Professor of Zoology, The Bloom, Canaan lane, Edinburgh. 1901
470 Law, A. Bonar, M.P., Kintillo, Helensburgh. 1905
Law, Jas. H., Brandon House, Ibrox. 1901
Law, John R. K., 20 Ashton gardens, Dowanhill. 1896
Lawrie, Sir Archibald C., LL.D., The Moss, Dungoyne, Stirlingshire. 1905
*a*Lawson, Thomas, Birchgrove, Pollokshields. 1901
475*a*Lindsay, Archd M., M.A., 87 West Regent street. 1872
*a*Lindsay, John, Conylea, Westbourne gardens, Kelvinside. 1902
Lipton, Sir Thomas J., Bart., K.C.V.O., Grand Officer of the Crown of Italy, Osidge, Southgate, Middlesex. 1905
Lobban, William, M.A., 48 University avenue, Hillhead. 1905
Lochhead, Dugald Ferguson, 41 Kelvinside gardens, Kelvinside. 1902
480 Logan, James, Grammar School, Uddingston. 1902
Lothian, A. Veitch, M.A., B.Sc., F.R.S.E., Lecturer, Glendoune, Bearsden. 1891
Love, James Kerr, M.D., C.M., 173 Bath Street. 1888
Love, Wm., 28 Royal Exchange square. 1901
*a*Low, Isaac, 60 Weaver street. 1898
485*a*Lumsden, Harry, M.A., LL.B., 105 West George street. 1900
Lumsden, James, Arden House, Arden, Dumbartonshire. 1905
Lundholm, C. O., Nobel's Explosives Factory, Ardeer, Stevenston. 1890
M'Ara, Alexander, 65 Morrison st. 1888
Macara, James, 19 Waterloo street. 1901
490 Macara, James, Banker, 140 St. Vincent street. 1907
M'Arly, Thomas, 29 W. George st. 1897
*a*M'Arthur, John S., 74 York street. 1890
M'Ausland, William F., 51 Buchanan street. 1903
Macbean, Ed, F.R.G.S., F.R.S.L., 31 Athole gardens. 1901
495 M'Bryde, Peter, M.B., 18 Queen's crescent, W. 1900
M'Calman, George, 1 India st., W. 1905
*a*M'Callum, Hugh, M.A., 7 Bute Mansions, Hillhead. 1902
*a*M'Callum, Robert, junr., 69 Union street. 1891
*a*M'Clelland, Andrew Simpson, C.A., 4 Crown gardens, Dowanhill. 1884
500 M'Conville, John, M.D., 14 Parkgrove terrace. 1870
M'Connachie, John, 204 West George street. 1905
M'Cosh, Andrew K., Cairnhill, Airdrie. 1901
*a*M'Cowan, David, jun., 9 Park circus place. 1898
M'Cracken, James, 5 Bowmont terrace, Kelvinside. 1889
505 M'Crae, John, 7 Kirklee gardens, Kelvinside. 1876
M'Creath, James, M.E., 208 St Vincent street. 1874
M'Culloch, Hugh, 154 W. Regent street. 1880
M'Donald, Alexander Beith, M.Inst. C.E., city engineer, City Chambers. 1901
MacDonald, Charles, 55 Lochleven road, Langside. 1902
510*a*M'Donald, John, 72 Great Clyde st. 1896
*a*Macdougall, Robert, F.S.A.A., F.S.I., 138 West Regent street. 1900
Macfarlane, Dr Wm D., 17 Woodside crescent. 1906
Macfarlane, Dr Wm D., Jun., 17 Woodside crescent. 1906
*a*Macfarlane, Walter, 22 Park circus. 1885
515 M'Farlane, Wm, Edna Lodge, Rutherglen. 1888
Macfee, John, M.I.E.E., 65 Renfield street. 1905
Macgeorge, B. B., 24 George square. 1905
MacGillivray, Duncan, M.A., 37 Leven street, Pollokshields. 1906
*a*M'Gilvray, R. A., 129 West Regent street. 1880
520 M'Gregor, A. N., M.D., 14 Woodside place. 1900
MacGregor, D. O., M.D., Victoria Infirmary. 1904

*a*Macgregor, R. D., 137 West George street. 1900

Machell, Thomas, 1 Burnbank ter. 1886

*a*Macindoe, Alex., 104 West George street. 1894

525 Macintyre, John, M.B., C.M., 179 Bath street. 1895

*a*M'Intyre, T. W., 21 Bothwell st. 1900

Macintyre, Wm, F.E.I.S., Dalmarnock School, Glasgow. 1888

Mackay, R. C., 82 West Regent st. 1903

*a*M'Kechnie, D., 14 Candleriggs. 1900

530*a*M'Kechnie, Wm S., M.A., LL B., D.Phil., Knightswood, Elderslie, Renfrewshire. 1908

M'Kellar, John C., 45 West Nile street. 1896

M'Kellar, J., 25 Kelvinside terrace. 1893

Mackendrick, Alex., 518 Sauchiehall street. 1905

*a*M'Kendrick, John G., M.D., C.M., LL.D., F.R.S., F.R.S.E., F.R.C.P.E., *Emeritus*-Professor of Physiology in the University of Glasgow, Maxieburn, Stonehaven, N.B. *Hon. Vice-President.* 1877

535 M'Kendrick, J. Souttar, M.D., F.R.S.E., 2 Buckingham terrace. 1900

Mackenzie, Robert, 176 St Vincent street. 1905

*a*M'Kenzie, W. D., 43 Howard street. 1875

M'Kerrow, W. L., 65 Hamilton drive, Hillhead. 1908

Mackie, Alexander, Bank of Scotland, Glasgow. 1906

540 M'Kie, John, M.B., C.M., 24 Hillside terrace. 1899

Mackillop, Fred. G., M.A., LL.B., 208 St Vincent street. 1901

*a*Mackinlay, James Murray, The Lee, Merchiston, Edinburgh, 1886

*a*Mackinlay, J. T. C., 60 Montgomerie drive, Kelvinside. 1900

*a*Mackinlay, R. W., 52 Aytoun road, Pollokshields. 1900

545 Mackintosh, Donald J., M.B., C.M., Western Infirmary, 1894

Mackintosh, Walter, 19 Roxburgh street, Kelvinside. 1905

*a*Mackinnon, John, 170 Hope street. 1904

Mackinnon, William, C.A., 34 West George street. 1904

MacLachlan, Dugald, B.L., 30 Renfield street. 1901

50 Maclae, A. Crum, 192 St Vincent street. 1884

M'Laren, Robert, Royal Bank, Garscube cross. 1898

M'Lay, James, C.A., 94 Hope street. 1900

Maclay, William, Thornwood Hall, Langside. 1893

M'Lean, Angus, B.Sc.(Lond.), C.E., Principal, Technical College, Paisley. 1897

555 Maclean, A. B., Craigpark Works, Flemington street, Springburn. 1899

Maclean, Magnus, M.A., D.Sc., F.R.S.E., Professor of Electrical Engineering, Glasgow and West of Scotland Technical College, 51 Kersland terrace, Hillhead. 1885

*a*MacLehose, James, M.A., 61 St Vincent street, 1882

MacLellan, Lewis, 5 Bowmont gardens. 1899

*a*Maclellan, Peter, Glasgow Rubber Works, Maryhill. 1900

560*a*MacLellan, Robert, 3 Clairmont gardens. 1908

*a*Maclellan, Wm. Walter, 3 Montague terrace, Kelvinside. 1900

*a*Macleod, A., 54 Tytherton road, Tufnell park, London, N. 1893

*a*Macleod, Frederick Larkins, 142 St. Vincent street. 1901

M'Michael, James, jun , 1 Argyle arcade. 1908

565 M'Michael, Thomas, M.A., B.Sc., 54 Windsor street. 1901

M'Millan, A. Lewis, M.D., C.M., 1 Rosebery terrace, Great Western road. 1897

M'Millan, Archibald, 5 Whittinghame gardens. 1899

M'Millan, Robert, Methlan park, Dumbarton. 1901

*a*Macnab, James, Lilyburn, Milton of Campsie, Stirlingshire. 1901

570 Macnair, John, 136 Claythorn street, and 1 Morris place, Monteith row. 1900

Macnair, Matthew, 1 Morris place, Monteith row. 1901

Macphail, Donald, M.D., Garturk cottage, Whifflet, Coatbridge. 1877

Macquaker, Thomas, 89 West Regent street. 1902

Mactaggart, John A., Kelmscott, Springkell avenue. 1908

575 M'Vail, D. C., M.B., Professor of Clinical Medicine, St Mungo's College, 3 St James' terrace, Hillhead. 1873

M'Vail, John C., M.D., D.P.H. (Camb.), 20 Eton place, Hillhead. 1904

*a*Macwhannell, Ninian, 58 West Regent street. 1898

M'Whirter, W., 3 Albany street, Kelvinside. 1901

Main, Robert B., Lyndhurst, 1 Winton drive, Kelvinside. 1885

580 Malloch, A. M., Firhill, Garscube road. 1896

*a*Mann, James, Castlecraig, Dolphinton, Peeblesshire. 1900
*a*Mann, John, C.A., 142 St Vincent street, *Hon. Treasurer.* 1856
*a*Mann, John, jun., M A., C.A., 142 St Vincent street, *Vice-President.* 1885
Mann, Ludovic MacLellan, 144 St Vincent street. 1897
585 *a*Mann, Robert M., Rheubeg, Busby. 1900
Manwell, James, The Hut, 4 Albert drive, Pollokshields. 1876
Marks, Samuel, 145 Great Eastern road. 1884
Marr, John, J.P., Dunjarg, Bellahouston, Govan. 1900
Marr, Hamilton Clelland, M.D., Woodilee Asylum, Lenzie. 1899
590 Marshall, James, Woodcroft, Crow road, Partick. 1900
*a*Marshall, Robert, 97 Wellington street. 1900
Martin, James F., 63 Brunswick street. 1895
Martin, John, writer, 58 West Regent street. 1901
Martin, Robert, 23 Wilson street, Hillhead. 1897
595 Martin, William, 63 Brunswick street. 1903
Mathie, George M., Mayfield Clincarthill. 1895
Mathieson, J. H., 6 Park circus place. 1896
*a*Mathieson, T. O., 1 Park gardens. 1896
Mavor, Henry A., *Vice-President*, 47 Broad street, Mile-end. 1887
600 Mavor, Samuel, 37 Burnbank gardens. 1890
*a*Maxwell, Sir John Stirling, Bart., Pollok House, Pollokshaws. 1905
May, A. H., 15 Athole gardens. 1898
Mechan, Arthur, Scotstoun Ironworks. 1876
*a*Mechan, Henry, Scotstoun Iron Works, Scotstoun. 1879
605 Medley, Dudley J., M.A., Professor of History in Glasgow University, 6 University gardens. 1901
Mellanby, A. L., D.Sc., Professor of Motive Power Engineering, The Technical College, Glasgow. 1905
Menzies, William Crawford, City Improvement Trust, 22 King s . 1895
Millar, James, 152 Parliamentary road. 1870
Millar, Robert, 2 Rosslyn terrace, Kelvinside. 1903
610 *a*Miller, Alexander Wingate, 79 West Nile street. 1900
Miller, Alexander, junr., Dalmuir House, Dalmuir. 1899
*a*Miller, Arch. Russell, Hillpark, Bothwell. 1884
*a*Miller, George, Surrey House, Victoria Embankment, London, W.C. 1881
Miller, Hugh, M.A., F.E.I.S., 2 Bogton Avenue, Cathcart. 1901
615 *a*Miller, J. C , 188 St Vincent street. 1900
*a*Miller, Thomas Hodgson, Westcroft, Cleveland Walk, Bath. 1901
*a*Mirrlees, William J., 45 Scotland street. 1889
Mitchell, Alexander Brown, Glenview, Larkhall. 1901
*a*Mitchell, Alex. Moncrieff, 8 Kew terrace, Kelvinside. 1903
620 Mitchell. Andrew, C.A., The Glasgow District Subway Co., St Enoch square Station. 1896
*a*Mitchell, Andrew Acworth, 7 Huntly gardens. 1903
*a*Mitchell, George A., F.R.S.E., 5 West Regent street. 1883
Mitchell, Wm James, M.A., B.L., 48 West George street. 1897
*a*Moffatt, Alexander, 23 Abercromby place, Edinburgh. 1874
625 Mollison, James, 30 Balshagray aven., Partick. 1889
*a*Mond, Robert Ludwig, B.A. (Cantab.), F.R.S.E., 20 Avenue rd., Regent's park, London, N.W. 1890
*a*Monro, T. K., M.A., M.D., F.F.P.S.G., Professor of Medicine in St Mungo's College, 12 Somerset place. 1897
*a*Monteith, Robert, Greenbank, Dowanhill gardens. 1885
Moore. Alexander, C.A., Deanville, Bridge of Allan. 1869
630 Moore, Alexander George, M.A., B.Sc., 13 Clairmont gardens. 1886
*a*Moore, Robert Thomas, D Sc., 13 Claremont gardens. 1904
Morison, John L., M.A., The University, Glasgow. 1907
Morrice, Jas A., 1 Prince's ter., Dowanhill. 1883
*a*Morton, George, Horslethill road, Kelvinside. 1902
635 Motion, James Russell, 266 George street. 1887
Motion, Thomas Mason, 54 Grant street, W. 1897
Muir, Alexander, 134 Nithsdale road, Strathbungo. 1883
*a*Muir, Allan, Ardmay, Newlands road, Langside. 1881
*a*Muir, James, D.Sc., M.A., Professor of Natural Philosophy, Technical College, Glasgow, 189 Renfrew st. 1904

640 Muir, Robert, M.D., F.R.C.P.E., Professor of Pathology in Glasgow University, 16 Victoria crescent, Dowanhill. 1899
*a*Muirhead, Andrew Erskine, Cart Forge, Cathcart. 1873
Muirhead, James, 2 Bowmont gardens, Kelvinside. 1887
*a*Muirhead, Robert F., M.A., D.Sc., 64 Great George street, Hillhead. 1879
Munro, Alexander, M.B., C.M., 12 Seton Terrace, Dennistoun. 1900
645*a*Munro, Donald Mackay, 88 St Vincent street. 1901
Murdoch, Alexander, 557 Alexandra Parade. 1905
Murdoch, George, 40 St Vincent pl. 1894
Murdoch, John, 208 West George street. 1901
Murdoch, John, Chemist, 694 Duke street. 1907
650*a*Murdoch, Robert, 91 Maxwell road. 1880
*a*Murray, A. S. 169 West George street. 1905
Murray, C. Hope, jun., 98 West George street. 1908
Murray, Charles Robert, Woodbank, Partickhill. 1902
*a*Murray, Daniel, 5 Wilton crescent. 1896
655*a*Murray, David, LL.D., 169 West George street, *President*. 1876
Murray, John Bruce, 24 George sq. 1890
Murray, J. Campbell, 216 West George street. 1906
Murray, R. A., C.A., 175 West George street. 1905
*a*Naismith, William W., C.A., 57 Hamilton drive, Hillhead. 1907
660 Napier, Alex., M.D., F.F.P.S.G., Rose Bank, Queen Mary avenue, Crosshill. 1886
Napier, Robert T., 75 Bothwell street, Glasgow. 1899
*a*Neilson, George, LL.D., Wellfield, Partickhill road. 1897
*a*Neilson, James, 116 Bishop street, Port-Dundas. 1896
*a*Neilson, John, Mollance, Castle-Douglas. 1900
665*a*Neilson, Walter, Ewenfield, Ayr. 1900
Nelson, Alex., 63 North Frederick street. 1880
*a*Nelson, John E., 26 Queen street. 1900
Nelson, Thos C., Craiglea, Dennistoun. 1900
Ness, James, M.A., LL.B., 216 West George street. 1904
670 Ness, Professor R. Barclay, M.A., M.B., 19 Woodside place. 1902
*a*Newlands, Joseph F., 105 West George street. 1883
Nicol, James Monro, 93 Cheapside street. 1901
Nicol, William Smith, F.F.A., 30 Renfield street. 1905
Nicolson, W. B., 54 Hill street, Garnethill. 1906
675*a*Nicoll, Professor James H., M.B., 4 Woodside place. 1897
*a*Nisbet, John, 112 Bath street. 1905
Nish, Robert, 9 Claremont terrace. 1897

Orr, George Smith, 139 St Vincent street. 1901
Orr, John, 101 Wellington street. 1901
680*a*Osborne, Hugh, 4 Kew terrace, Glasgow. 1899
*a*Oswald, Dr Landel Rose, Glasgow Royal Asylum. 1902

*a*Park, Colonel J. Smith, V.D., 20 Park terrace. 1900
Parker, James H., B.L., C.A., 89 West Regent street. 1900
Parker, Dr W. A., Glasgow District Asylum, Gartloch. 1908
685*a*Parker John Dunlop, C.E., 146 West Regent street. 1889
*a*Painie, William, 27 Union street. 1897
Parry, Robert Henry, F.R.C.S.E., 25 Blythswood square. 1900
*a*Paterson, Robert, C.A., J.P., 105 West George street. 1881
Paterson, Thomas Y., 4 Lorraine gardens, Dowanhill, Glasgow. 1907
690 Paterson, Wm., M.B., C.M. (Edin.) 43 Millbrae Road, Langside. 1902
Paton, James, F.L.S., Glasgow Art Gallery and Museum, Kelvingrove. 1876
Paton, Professor D. Nöel, M.D., B.Sc., F.R.C.P.E., 4 University gardens. 1908
Patrick, Joseph, M.A., C.A., 203 West George street. 1893
Patrick, Joseph, Royal Exchange buildings. 1900
695 Patterson, T. L., F.C.S., Maybank, Finnart street, Greenock. 1873
Petrie, John W., 4 Garrioch drive, Kelvinside, N. 1900
Pettigrew, Andrew H., 3 Claremont terrace. 1902
*a*Picken, David Kennedy, B.A., Victoria College, Wellington, New Zealand. 1903
Pinkerton, Surgeon-Major-General, J., M.D., K.H.P., Queen's Park House, Langside. 1900
700*a*Pirrie, Robert, 9 Buckingham ter. 1875
Playfair, David James, 7 Victoria crescent, Dowanhill. 1901

Pollock, A. Barr, M.B., C.M., 3 Belgrave terrace, Hillhead. 1897
*a*Pollock, R., M.B., C.M., F.F.P.S.G., Laurieston house, Pollokshields. 1883
Prentice, Thomas, 15 Eglinton drive, Kelvinside. 1905
Provand, A. D., 2 Whitehall court, London, S.W. 1888
705 Purdie, Anthony, F.S.I., 241 West George street. 1908
Purdie, Wm G., 3 Gower street, Kelvinside. 1906

Raalte, Jacques Van, c/o M. Van Raalte, Esq., 22 Austen Friars, London, E.C. 1884
*a*Ralston, William Henry, 4 North Court, Royal Exchange. 1900
Ramsey, Robert, 14 Park terrace. 1889
710 *a*Ramsey, Robert, junr., 14 Park ter. 1898
Rankin, The Rev. W. M., B.D., clergyman, 8 Craigpark, Dennistoun. 1900
Rankine, Adam, Rolandseck, Bridge of Weir. 1901
Rankine, David, C.E., 238 West George street. 1875
*a*Reid, Andrew Thomson, 10 Woodside terrace. 1900
715 Reid, David, 44 Lilybank gardens, Hillhead. 1887
*a*Reid, Hugh, Belmont, Springburn. 1880
*a*Reid, James A., Dean of Faculty of Procurators, 172 St Vincent street. 1904
Reid, James, 15 Montgomerie crescent. 1886
*a*Reid, Joseph, 32 Newark drive, Pollokshields. 1901
720 *a*Reid, Nicholas M'Whirter, 7 Oakley terrace, Dennistoun. 1901
Reid, Thos, M.D., LL.D., 11 Elmbank street. 1869
*a*Reid, Walter M. N., 10 Woodside terrace. 1904
Reid, William, M.A., The Park Cottage, Garscube, Maryhill. 1881
*a*Reid, William L., M.D., 7 Royal crescent, West. 1882
725 Renton, James Crawford, M.D., L.R.C.P. & S.Ed., 1 Woodside terrace. 1875
*a*Rennie, John, Wellcroft, Helensburgh. 1901
Rennie, Thomas, Glasgow Art Gallery and Museum, Kelvingrove. 1905
*a*Renwick. Wm. Langgarth, Stirling. 1901
Ritchie, Dr John, 12 Belmont street. 1908
730 Robb, George, carting superintendent, Caledonian Railway. 1901
Robb, Thomas D., M A., Traquair, Potterhill, Paisley. 1906
*a*Roberton, William, 223 Sauchiehall street, Glasgow. 1899
*a*Robertson, Henry Tod, Meadowbank, Airdrie. 1901
Robertson, J. M'Gregor, M.A., M.B., C.M., 26 Buckingham ter., Hillhead. 1881
735 *a*Robertson, Robert, B.Sc., M.Inst. C.E., M.I.E.E., etc., 154 West George street. 1900
Robertson, Robert H., Clyde bank, Rutherglen. 1888
Robertson, William, 45 West Nile street. 1900
Rodger, Anderson, Glenpark, Port-Glasgow. 1899
Roemmele, C. H., 31 Kelvinside gardens. 1900
740 *a*Rogers, John C., 204 Bath street. 1888
Rose, James A., 11 Kirklee road, Kelvinside. 1907
*a*Ross, John, Lochbrae House, Bearsden. 1885
Ross, John, Munn, C.A., 117 Wellington street. 1894
Ross, James Russell, manager, Parkhead Steel Works, 7 Ashfield gardens, Jordanhill. 1901
745 Rottenburg, Fritz, 55 West Regent street. 1905
*a*Rottenburg, Paul, LL.D,. 55 West Regent street. 1872
Rowan, John, M.B., F.F.P.S.G., 10 Woodside crescent. 1900
Rowan, W. G., 234 West George st. 1881
*a*Rowley, Thos, Campbell street, Govan 1901
750 Russell, Robert, M.E., Coltness Iron Co., Ltd., Newmains, Lanarkshire. 1901
Russell, William W., M.A , 235 West Princes street. 1906

Salmon, W. Forrest, F.R.I.B.A., 53 Bothwell street. 1870
*a*Samuel, John Smith, F.R.S.E., J.P., secretary to the Lord Provost of Glasgow, City Chambers. 1901
Sandeman, B., Ferndean, Lenzie. 1900
755 Sandilands, Robert Douglas, 4 Jane street, Blythswood square. 1902
*a*Sawers, George B , Hydepark Locomotive Works, Glasgow. 1907
Sawers, William D., Assoc.I.C., Athole Garden place. 1894
Sayers, William Brooks, M.I.E.E., 189 St Vincent street. 1890
Scoble, Walter A., B.Sc., Wh.Sch., Glenturret, Paisley rd., Renfrew. 1906
760 Scott, Alexander, M.D., 12 Newton place. 1900

Scott, Alex., 34 Lawrence street, Dowanhill. 1871
*a*Scott, D. M'Laren, The Grange, Bearsden. 1881
Scott, John, 249 West George street. 1892
*a*Service, Edward, 92 St Vincent street. 1901
765 Service, R. Gibson, 14 Royal Exchange buildings. 1900
*a*Service, William, 1 Queen's gate, Dowanhill. 1900
Sexton, A. Humboldt, F.C.S., F.I.C., F.R.S.E., Professor of Metallurgy, Glasgow and West of Scotland Technical College, 204 George street. 1892
Shand, F. J., 4 Bowmont gardens, Kelvinside. 1903
*a*Shanks, J. B., 46 Gordon street. 1900
770*a*Shaw, A. M'Innes, Dunard, Sydenham, Dowanhill. 1900
*a*Shearer, William, 108 St Vincent street. 1901
*a*Sherriff, George, Carronvale, Larbert, Stirlingshire. 1900
Shields, Daniel, 104 West George street. 1900
Simons, Michael, 2 Kensington gate. 1880
775*a*Simpson, J. C., M.D., 9 Marlborough terrace, Kelvinside. 1896
Sloan, Samuel, M.D., 5 Somerset place. 1877
Sloan, William, Dunara, Helensburgh. 1905
Smart, William, M.A., LL.D., Professor of Political Economy, University of Glasgow, Nunholm, Dowanhill. 1886
Smellie, James, I.M., 112 Bath street. 1901
780*a*Smith, Andrew, Miltonlea, Kilmacolm. 1901
Smith, Colonel J. N., V.D., Dykebar house, Hawkhead, Paisley. 1900
Smith, D. Johnstone, C.A., 142 St Vincent street. 1888
*a*Smith, David Baird, LL.B., 205 St Vincent street. 1903
*a*Smith, Fred. J., 40 St Vincent place. 1901
785 Smith, Hugh C., 55 Bath street. 1861
*a*Smith, J. Guthrie, 205 St Vincent street. 1875
*a*Smith, James Murray, 11 Bute gard 1901
*a*Smith, Lewis O., 2 Windsor terrace, West. 1907
Smith, Patrick A., M.D., F.F.P.S.G., J.P., Dundrennan, 50 Queen Mary avenue, Crosshill. 1900
790 Smith, Robert B., 28 Glisson road, Cambridge. 1884
*a*Smith, W. B., 34 Newark drive, Pollokshields. 1895
*a*Smith, W. Robertson, 8 Windsor terrace, W. 1902
Snodgrass, J. F., Ashbourne, Winton drive, Kelvinside. 1900
Snodgrass, William, M.A., M.B., C.M., F.F.P.S.G., 11 Victoria cres., Dowanhill. 1890
795 Soddy, Frederick, M.A., Chemistry Department, Glasgow University. 1904
Speirs, William, Junr., Invershiel, Lenzie. 1905
*a*Spencer, Charles L., Edgehill, Kelvinside. 1891
*a*Spencer, J. J., Edgehill, Kelvinside. 1895
Spens, John A., 169 West George street. 1879
800*a*Steel, James, M.A., 502 St Vincent street. 1901
*a*Steel, William Strang, Philiphaugh, Selkirk. 1889
*a*Stephen, John, Domira, Partick. 1880
Sterling, John Lockhart, 62 Bothwell circus. 1901
Steven, Henry, 35 College street. 1900
805 Steven, John, 9 Princes terrace, Dowanhill. 1875
*a*Stevenson, D. M., 12 Waterloo street. 1889
Stevenson, John G., 147 St Vincent street. 1903
Stevenson, J. V., Dunacre, Beech avenue, Bellahouston. 1902
Stevenson, Samuel, 4 Royal terrace, Crosshill. 1902
810 Stevenson, William, 13 Carlton place. 1888
Stewart, Allan Alfred, 180 Hope street. 1901
Stewart, Donald T., 124 Cambridge street. 1908
Stewart, James B., 124 Cambridge street. 1908
Stewart, John, 220 Parliamentary rd. 1899
815 Stewart, Robert, Ellerslie, Partickhill. 1899
*a*Stewart, Robertson Buchanan, 146 Argyle street. 1901
Stirton, Jas, Dr, M.D., F.L.S., 5 Newton terrace. 1908
Stobo, John, M.A., Teacher, 142 St. George's road. 1906
*a*Stobo, Thomas, Somerset house, Garelochhead. 1884
820 Stockdale, H. F., Clairinch, Upper Helensburgh. 1899
Stockman, Ralph, M.D., F.R.S.E., Professor of Materia Medica, The University of Glasgow. 1897
Stoddart, James Edward, Howden, Mid-Calder, N.B. 1872
Strachan, George, Fairfield Works, Govan. 1900

*a*Strain, James M., 15 Kingsborough gardens, W. 1900
825*a*Strain, John, C.E., Cassilis House, Maybole, Ayrshire. 1876
Strathie, David, C.A., 162 St Vincent street. 1895
*a*Sutherland, David, Balmaccara Hotel, Lochalsh. 1880
*a*Sutherland, John, Columba Hotel, Oban. 1880
Sutherland, J. R., C.E., 45 John street. 1884
830 Swan, Charles C., 30 Renfield street. 1891
Syme, W. S., M.D.(Edin.), 10 India street. 1908

Tait, William, 2 Knowe terrace, Pollokshields. 1902
Tannock, William, Woodend, Tarbolton. 1906
Tatlock, John, F.I.C., 13 Parkgrove terrace, West, Sandyford. 1875
835 Tatlock, Robert R., F.R.S.E., F.I.C., F.C.S., 156 Bath street. 1868
Taylor, Benjamin, F.R.G.S., 10 Derby crescent, Kelvinside. 1872
Taylor, James, 143 West Regent street. 1906
*a*Teacher, John H., M.B.. C.M., 32 Kingsborough gardens, Dowanhill. 1898
Templeton, James, 2 Claremont terrace. 1900
840 Templeton, John Stewart, William street, Calton. 1900
Tennant, Alexander, Bothwell Bank, Bothwell. 1905
*a*Tennent, Gavin P., M.D., 159 Bath street. 1875
Thomas, Moses, M.D., 1 Spring gardens, Kelvinside. 1890
*a*Thomson, Edward J., Western Club. 1904
845 Thomson, Gilbert, M.A., C.E., 164 Bath street. 1885
Townsend, C. W., Crawford street, Port-Dundas. 1890
Trotter, John, 40 Gordon street. 1899
*a*Tullis, James Thomson, Aytoun, Sydenham road, Dowanhill, 1883
*a*Tullis, John, John street, Bridgeton. 1900
850 Turpie, John, 420 Sauchiehall street. 1896

Ure, William P., Balvaird, Helensburgh 1893

Vaughan, J., 7 Campside crescent, Langside. 1902

*a*Waddell, Robert Davidson, Rednock, Kelvinside, W. 1901
Walker, Adam, 2 Newton place. 1880
855*a*Walker, Alexander, City Chambers. 1903
*a*Walker, Archibald, M.A.(Oxon.), F.I.C., F.C.S., 7 Crown terrace, Dowanhill. 1858
Walker, J. W. O., 12 The Polygon, Eccles., Manchester. 1896
*a*Walker, William H., Cardarroch House, Airdrie. 1900
Wallace, James Wilson, M.D., C.M., Cairnsmore, 67 St Andrew's drive, Pollokshields. 1900
860 Wallace, William, M.A., LL.D., barrister-at-law, 42 Athole gardens, Dowanhill. 1900
*a*Walker, Hugh, M.A., M.B., C.M., 52 Kilmarnock road, Shawlands. 1903
Walker, James A., 206 Bath street. 1898
*a*Wallace, Wm., M.A., M.B., C.M., 25 Newton place. 1888
*a*Wardlaw, Alex., The Clydesdale Bank, Ltd. 1900
865 Wardlaw, Robert S., 25 High street, Tillicoultry. 1906
Warren, John A., C.E., 94 Hope street. 1887
Watson, Archibald, 9 Montgomerie drive, Kelvinside. 1881
Watson, Harold, 9 Holland place. 1901
Watson, James, 6 Kirklee road, Kelvinside, W. 1873
870 Watson, John, National Bank, Crosshill. 1900
Watson, Joseph, Chappell, Barrhead. 1882
*a*Watson, J. Robertson, M.A., Professor of Chemistry, Anderson's College Medical School, Dumbarton road. 1891
*a*Watson, Thomas Lennox, I.A., F.R.I.B.A., 166 Bath street. 1876
*a*Watson, William W., 5 Westbourne terrace. 1899
875 Watt, Alexander, 183 St Vincent st. 1900
Webster, H. Carvick, 48 Montgomerie drive. 1900
*a*Weir, James, 72 St Andrew's drive, Pollokshields. 1902
Weir, T. H., M.R.A.S., 64 Partickhill road. 1908
*a*Weir, William, Adamton, Monkton, Ayrshire. 1901
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*a*Whitson, Jas, M.D., F.F.P.S.G., Blairgowrie. 1882
Wield, John, 9 Barns street, Ayr. 1895
Wilkie, Daniel, 53 Bothwell street. 1906
Williams, Alexander Malcolm, M.A., Church of Scotland Training College. 1903

885 Williamson, John, 65 W. Regent st. 1881
Wilson, Alex., Hydepark Foundry, 54 Finnieston street. 1874
*a*Wilson, David, M.A., D.Sc., F.C.S., Carbeth, Killearn. 1898
Wilson, Thomas F., 163 Hope st. 1901
Wilson, Thomas, 11 Glenmore road, Hampstead, London. 1902
890 Wilson, Walter Stuart, 4 St John's terrace. 1901
Wilson, Wm, F.E.I.S., Schoolhouse, Pavenham, Bedford. 1889
Wingate, Arthur, Broomcraig, Largs. 1882
Wingate, Walter E., 1 King's Gate, Glasgow, W. 1880
Wood, Adam, Portland villa, Troon. 1901
895 Wood, James, Dunard Street Public School, 23 Cranworth street, Hillhead. 1900
Wood, James, M.A., Glasgow Academy. 1885
*a*Wood, William James, 46 Queen's square, Regent Park. 1893
Woodrow, Alexander, 75 Glassford street. 1900
Woodrow, Alexander Norie, 75 Glassford street. 1900
900 *a*Workman, Chas, M.D., F.F.P., & S.G., Professor of Pathology, St Mungo's College, 5 Woodside ter. 1898
Wright, Robert Patrick, Professor of Agriculture, West of Scotland Agricultural College, 6 Blythswood square. 1895
Wylie, William A., 13 Woodside terrace. 1901
Wyllie, Archibald D., 1 Minard terrace, Partickhill. 1905
Wyper, James, Nithsdale Lodge, Pollokshields. 1900

905 Yellowlees, D., M.D., LL D., 6 Albert gate. 1881
Young, Frank W., H.M. Inspector of Schools, 32 Buckingham ter. 1902
Young, Fred H., 2 Woodside terrace. 1907
*a*Young, James, jun., Caerleon, Bearsden. 1900
*a*Young, John E., 24 Belhaven ter, Kelvinside. 1900
910 Young, John, 8 Athole gardens, Hillhead. 1900
Young, John, 2 Montague terrace, Kelvinside. 1885
*a*Young, John, M.A,. B.Sc., 28 Bank street, Hillhead. 1887
Young, John, 42 Bath street. 1900
Yuill, John Weir, Glenmillhouse, Campsie Glen. 1901

INDEX.

Abstracts of accounts, 210, 211, 212, 213, 214.
Accounts, abstracts of, 210, 211, 212, 213, 214.
Adam, Robert, 76.
Adam, William, 75.
"Age and Youth," Poem by Johnston, 116.
Alcohol, consumption of, 167; and commercial prosperity, 169; and disease, 171.
Alcoholic liquors, consumption of, per head in 1907, 170.
Alden, Percy, remarks on overcrowding, 21.
Alloy, Heusler's Magnetic, 41-46.
Animae, De Tranquillitate, of Florence Wilson, 110.
Annual elections, 222.
Appendix: Dr David Murray on Burgh organization.
Architects, some notable Scottish, 73-91.
Architectural Dictionary, 79.
Architectural Section, office-bearers of, 225.
Architectural Society, institution of, 73.
Argenis, the, of John Barclay, 117.
Assembly Hall, Edinburgh, 81.
Athenæum, the old, 76.
Ayton, Sir Robert, on Joan of Arc, 108.

Balance sheet, 212.
Barclay, John, the *Argenis* of, 117.
Beer and whisky drinkers contrasted, 177.
Beer, consumption of, per head, 171; and cirrhosis of the liver, 173; dangerous additions to, 176.
Bilsland, Lord Provost, 206.
Biological section, office-bearers of, 225.
Birth-rate, decline of, 180.
Birth-rate in Scotland, 203: in Glasgow, 204; in Geneva, 1695-1833, 201.
Blackmore's, "Prince Arthur," analysis of, 133; epics, 131.
Brisbane, population and valuation of, 157; mode of transaction in, 157; municipal regulations of, 158; legislative council of, 158; newspaper partisanship in, 159; River, 156, 157.
Brodick Castle, 81.
Brownlee, Dr John, on "Germinal Vitality: a study of the growth of nations as an instance of a hitherto undescribed factor in evolution," 180-204.
Brownlee, Dr John, elected a member of council, 222.
Bruce, Sir William, 74.
Bryce, David, 87.
Buchanan House, 83.
Building Trade, fluctuations of the, 21-40.
Burgh Organization in Scotland, Appendix.
Burn, William, 82.
Burns' Monument, Edinburgh, 82.

Callendar & Nicolson on rate of condensation, 150.
Callendar & Nicolson's experiments on valve leakage, 149.
Carlton Place, 79.
Casual labourer, and crime, 2.
Census returns, comparison of, 22.
Cirrhosis of the liver, and beer-drinking, 173; death-rate from, 174.
Committees appointed by the Council, 227.
Condensation, initial, theory, 147; Mellanby's experiments on, 151; rate of, 150.
Construction of permanent magnets from specimens of nearly pure copper, 92-96.
Convict, (released), protection of the public from, 5; alleged tyranny of police towards, 6.
Copper, nearly pure, construction of permanent magnets from, 92.
Corporation property, letting of, 26.
Cost and rental per apartment, 36.
Cottage *v.* tenement. 33.
Council Report, 207.
Crime, the punishment and prevention of, by J. V. Stevenson, 1-12.
Crime, punishment of, 4; prevention of, 8.
Crawford's musical instrument, 14.
Criminals, incorrigibility of; examples, 6; how are they to be reformed? 8; protection of, 4; publication of their careers mischievous, 8; proportion of, to the population, 3.

Criticism, English, after the restoration, 135.

Dalkeith Palace, 83.
Davenant, Richard Hurd on, 128.
Davenant's "Gondibert," 123.
Death-rates from alcoholism, 167, 172, 174; from delirium-tremens, 174; from cirrhosis of liver, 174, 176: from gallstones, etc, 176; in Geneva, 1695-1833, 201.
Delirium-tremens, death-rate from, 174.
Delitiae Poetarum Scotorum, by T. D. Robb, 97-120.
Discipline, evil effects of early relaxation of, 11.
Disease and alcohol, 171.
Don Quixote, by Professor W. P. Ker, 47-59.
Donaldson's Hospital, Edinburgh, 85.
Drink, consumption of, and house rent, 40; bill of the United Kingdom, 168; habits of hospital patients, 178.
Drunkenness in Glasgow and other cities, 177.
Dulcitone, the, (Machell's), 16-20.
Duncan, Dr Eben., on "Some observations on the consumption of alcohol, and on the comparative death-rate from alcoholic excess in England, Ireland and Scotland," 167-179.
Dunn, T. D., on "English epical theory and the heroic poem," 121-142.

Echlin, David, the *ova paschalia* of, 111.
Economic Science Section, office-bearers of, 226.
Edinburgh University, 76.
Elections, annual, 222.
Electro-magnet in the Physical Lab. of Glasgow University, 92.
Energy, periods of, in nations, 194; periods of, in species, 196.
Engines, super-heated steam in, 153; theories of steam losses in, 146; uncertainty about fixing dimensions of, 144.
England, periods of growth of, 185.
English epical theory and the heroic poem, by T. D. Dunn, 121-142.
Epic, Elizabethan conception of the, 122.
Epical Theory, English, 121.
Evolution, a hitherto undescribed factor in, 180.
Exchanges with other societies, etc., 235-242.
Exodus from the city, 35.

Faculty Hall, George Place, 89.
Ferguson, R. C. Munro, M.P., on "Small Holdings" (title only), 217.
Fettes College, Edinburgh, 88.
Finance, committee on, 227.
Fischer of Dresden, "Adiaphon" of, 15.
Fleming, Sir James, elected a member of council, 222.
Fluctuations of the building trade and Glasgow's house accommodation, by William Fraser, 21-40.
France, periods of growth of, 190-193.
Fraser, William, on "Fluctuations of the building trade and Glasgow's house accommodation," 21-40.
Free Church College, Edinburgh, 85.

Gardner, Alexander, on "Some notable Scottish Architects," 73-91.
Geographical and Ethnological section, office-bearers of, 226.
Geneva, birth and death rates in, 201.
Germinal Vitality: a study of the growth of nations as an instance of a hitherto undescribed factor in evolution, by Dr John Brownlee, 180-204.
Germinal Vitality, conclusions from Brownlee's theory, 199.
Gillespie-Graham, James, 80.
Glasgow, birth-rate in, 204; drunkenness in, 177; exodus from, 35; house building in, during thirty-five years, 29, 30; police courts, probation system in, 9; rental of, at different periods, 35; sales of tenements in, 27; unlet rental and average rent in, 25.
Glasgow's house accommodation, 21-40.
"Gondibert," the beginning of the English heroic poem, 123.
Graham Medal, rules governing the competition for the, 205; committee on the fund, 227; accounts, 213.
Gray, James G., on "The construction of permanent magnets from specimens of nearly pure copper," 92.
"Greek" Thomson, 79, 90.
Gregory, Prof. J. W., on artesian water, 161; elected a member of council, 222.
Growth of Nations, 180.
Growth, somatic, 182; of higher forms of life, 181.

Hamilton, David, 79.
Hamilton Palace, 80.
Hamilton, Thomas, 81.
Heroic poem, the, 121.
Heusler's magnetic alloy, 41-46.
High School, Edinburgh, 82; Glasgow, 89.
Historical and Philological section, office-bearers of, 226.
Holyrood House, 75.
Hopetoun House, 75.
House committee, 227.
House, accommodation in Glasgow, 21-40; building in Glasgow for thirty-five years, 29, 30; rent and consumption of drink, 40; sales in Glasgow, 27.
Houses, improved conveniences in, 23, 32.
Hunterian Museum, 78.

Hurd on Davenant, 128.
Hutcheson's Hospital, 79.

Inglis, Dr John, elected a member of conncil, 222.
"Initial Condensation" theory, 147; Mellanby's experiments on, 151.

Jack, Robert, on "Heusler's magnetic alloy," 41-46.
Joan of Arc, Sir Robert Ayton on, 108.
Johnston, Arthur, the *Parerga* of, 113; his epistle to David Wedderburn, 114; on "Age and Youth," 116; and the *Delitiae Poetarum Scotorum*, 103, 107.

Kelvin, Lady, letter from, 218.
Kelvin, Lord, by Professor Magnus Maclean, 60-72; list of communications of, to the Society; intimation of death of, 216.
Kelvingrove Park, 89.
Kemp, George Meikle, 86.
Ker, Professor W. P., on "Don Quixote," 47-59.
Kerr, Prof. J Graham, elected Vice-President, 222.
Keyboard percussion instruments, 13-20.
King, Adam, completion of Buchanan's *De sphera*, 102.
Knight, Dr James, re-appointed Hon. Librarian, 222.
Knox Monument, 82.

Lankester, Sir Edwin Ray, 206.
Leakage, valve, 149.
Letting of Corporation property, 26.
Lewis Castle, 89.
Library, additions to the, 228-234; committee on the, 227; report, 208; hours, 245.
Life, growth of higher forms of, 181.
Logan, James, on "Some Experiments in the Simplification of Reed and Brass Instruments" (title only), 215.

Machell, Thomas, on "Keyboard percussion instruments," 13-20.
Mackillop, Fred. G., elected a member of council, 222.
Maclean, Prof. Magnus, on "Lord Kelvin," 60-72.
M'Lean, Principal Angus, elected a member of council, 222.
Magnetic Alloy, Heusler's, 41-46.
Magnetic elements, the, 92.
Magnets, permanent, construction of, from copper, 92.
Maitland, Tnomas, the *Sylvae*, 105.
Mann, John, re-appointed Hon. Treasurer, 222.
Martin, James F., appointed Auditor, 222.
Martin of Paris, percussion stop of, 13.
Marwick, Sir James, announcement of death of, 221.
Mathematical and Physical Section, office-bearers of, 226.
Meeting, change of date of, 221.
Mellanby, Professor A. L., on "Some disputed points in the theory of the steam engine," 143-154.
Mellanby's experiments on initial condensation, 151.
Melville, Andrew, the *Stephaniskion* of, 106.
Members, list of—Honorary, 246; Corresponding, 247; Ordinary, 247-262.
New:—
  Honorary—
    Crookes, Sir William, 222.
    Gill, Sir David, 223.
    Macallum, Prof. Archibald B., 223.
  Ordinary—
    Arthur, Henry M., 218.
    Blair, Alexander, 218.
    Boyd, T. A., 223.
    Bryce, Dr Thomas H., 223.
    Copland, W. R., 209.
    Cree, H. G., 215.
    Eadie, George, 219.
    Forgan, D. L., 223.
    Gardiner, James, 215.
    Hutchison, William, 215.
    Kelly, Dr A. Brown, 219.
    Kerr, Thomas, 215.
    Kirkwood, Charles, 215.
    Lanchester, W. F., 215.
    M'Kechnie, William S., 217.
    M'Kerrow, W, L., 215.
    MacLellan, Robert, 220.
    M'Michael, James, Jun., 206.
    Mactaggart, John A., 206.
    Murray, C. Hope, 206.
    Parker, Dr W. A., 206.
    Paton, Professor D. Nöel, 223.
    Purdie, Anthony, 218.
    Ritchie, Dr John, 206.
    Stewart, Donald T., 218.
    Stewart, James B., 218.
    Syme, Dr W. S., 215.
    Weir, T. H., 223.
Merchants' House, the old, 75.
Minutes of Session, 206.
Musical percussion instruments, 14.
Murray, A. S., Auditor, 209.
Murray, Dr David, on "Early Burgh organization in Scotland as illustrated in the history of Glasgow," Appendix.
Mustel, Victor, musical instrument of, 14.

Naismith, W. W., Auditor, 209.
National Gallery, Edinburgh, 85.

Nations, fluctuations in growth of, 184.
Nicholson, Peter, 78.
Niddrie, 83.

Office-bearers of Sections, 225, 226.
Office-bearers of the Society, 224.
Ova Paschalia of David Echlin, the, 111.
Overcrowding, standard of, 23; and unlet houses, 24.

Papers, committee on, 227.
Parega, of Arthur Johnston, 113.
Percussion instruments, keyboard, 13-20.
Periodicals, list of, 243-245.
Philosophical Society, list of communications to, by Lord Kelvin, 70-72.
Piano, Bell, 14.
Playfair, William Henry, 84.
Population, density of, in working-class tenemënt, 24; sources of increase of, 21.
Poetarum Scotorum, *delitiae*, 97.
"Prince Arthur," analysis of Blackmore's, 133.
Prins, Prof., on crime and the working-classes, 2.
Prison, authorities should be reluctant to commit persons to, and should not readily release them from, 8, 9.
Probation of First Offenders Act, 9.
Public-houses, and Saturday afternoon closing, 179.
Pugin, A. W., 81.
Punishment and prevention of crime, 1-12.

Queen Margaret College, 90.
Queensland in 1906, by Thomas Wilson, 155-166.
Queensland, position of, 155; climate, 155; death-rate in, 156; parliament of, 159; rainfall in, 160; irrigation in, and water supply of, 160; pastoral industry of, 162; mineral wealth of, 163; agriculture in, 163; railways in, 164; education in, 164.

Raasay Castle, 89.
Reclamation of the submerged class, 2.
Reformatory treatment, plea for extending the age for, 12.
Reid, David, appointed Auditor, 222.
Rent, average in Glasgow, 25; per room, 22, 37; per head, 39.
Rental and cost per apartment, 36.
Rental, unlet, in Glasgow, 25; and cost per apartment, 36.
Report of council, 207.
Report of library committee, 208.
Riccarton, 83.
Robb, T. D., on "*Delitiae Poetarum Scotorum*," 97-120.
Rockead, John T., 90.
Room, rent per, 22-36.
Ross, Alexander D., on "The construction of permanent magnets from specimens of nearly pure copper," 92; on "Heusler's magnetic alloy," 41-46.
Ross, Alexander, the *Virgilius Evangelizans* of, 110.
Royal Exchange, 79.
Royal Infirmary, Edinburgh, 88; Glasgow, 76.
Royal Lunatic Asylum, 89.
Royal Institution, Edinburgh, 85.

St. Andrew's Cathedral, 80.
St. George's Church, 78.
St. Paul's Church, 79.
Sanitary and Social Economy Section, office-bearers of, 225.
Science Lecture Trust Committee, 227.
Science Lectures Association Fund account, 214.
Scoble, Walter A., on "Aerial Flight" (title only), 219.
Scot, Sir John, the real editor of *Delitiae Poetarum Scotorum*, 99.
Scotorum, *Delitiae Poetarum*, 97.
Scotland, birth-rates in, 203; Burgh organization in, Appendix.
Scottish Architects, Alexander Gardner on, 73-91.
Scott Monument, Edinburgh, 84, 87.
Scott, Walter, anecdote of, 86.
Seck, George, musical instrument of, 14.
Sections, office-bearers of, 225-226.
Sentence (on persons), largely indeterminate in the United States, 10.
Sentences (on criminals), degrading effects of, 7.
Sheriff Court House, Edinburgh, 88.
Somatic growth, 182.
Some disputed points in the theory of the steam engine, by Prof. Mellanby, 143-154.
Some Notable Scottish Architects, by Alexander Gardner, 73-91.
Some observations on the consumption of alcohol, and the comparative death-rate from alcoholic excess in England, Ireland and Scotland, by Dr. Eben. Duncan, 167-179.
Stark, William, 77.
Steam cylinders, effect of water in, 150.
Steam Engine, some disputed points in the theory of the, 143-154.
Steam Engines, valve leakage in, 149.
Steam losses in engines, theories of, 146.
Stephaniskion, the, of Andrew Melville, 106.
Stevenson, J. V., on "The punishment and prevention of crime," 1-12.
Super-heated steam in engines, 153.
Surgeon's Hall, Edinburgh, 85.
Sylvae, the, of Thomas Maitland, 105.

Tawney, R H., on "The Theory of Pauperism" (title only), 221.
Taymouth Castle, 81.
Tenement *v.* cottage, 33.
Thomson, Alexander, 90.
Trading (street), a bad training for the young, 11.
Tynninghame, 83.

Unemployable, the, 3.
Unlet rental in Glasgow, 25.

Valve leakage in steam engines, 149.
Variation, rhythmic, in animal and plant life, 196, 197, 198.
Vitruvius Scotticus, 76.

Wallace, Prof. Robert, on "An account of a recent visit to North America" (title only), 220.
Water in steam cylinders, 150.
Wedderburn, David, Arthur Johnston's epistle to, 114.
Whisky and beer drinkers contrasted, 177.
Wilson, Florence, the *De Tranquillitate Animae*, 110.
Wilson, Charles, 89.
Wilson, Thomas, on "Queensland in 1906," 155-166.
Woods, George, musical instrument of, 14.

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APPENDIX.

EARLY BURGH ORGANIZATION IN SCOTLAND AS ILLUSTRATED IN THE HISTORY OF GLASGOW,

BY

DAVID MURRAY, M.A., LL.D., F.S.A.

[Presidential address delivered before the Society, 27th March, 1907.]

EARLY BURGH ORGANIZATION IN SCOTLAND

AS ILLUSTRATED

IN THE HISTORY OF GLASGOW

AND OF SOME NEIGHBOURING BURGHS

CHAPTER I

EARLY BURGH ORGANIZATION IN SCOTLAND

WITH us 'burgh' and 'town' are, save in certain technical uses, interchangeable, having both, to some extent, lost their original meanings. Literally the 'tun' or 'toun' was the enclosure or hedge that fenced the homestead of a single farm, or that enclosed a village.[1] The burh[2] was the fortified house or court-yard of the

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[1] Stubbs, *Constitutional History*, i. p. 93; Ross, *Early History of Landholding among the Germans*, p. 159; Robertson, *Scotland under her Early Kings*, i. p. 294. John Spotiswood speaking of burgh says, "That the word in its most ancient Signification, denoted an Inclosure or Hedge, which was otherwise called *Taun* or *Tuyn*, in the same sense we now use the word *Town*, which have been originally built for the accommodation and security of the people, that they might be near one another, to give mutual assistance in their ordinary business; and also to be ready to defend themselves against the attempt of enemies." *Practical Observations upon . . . Hope's Minor Practicks*, p. 315, Edinburgh 1734, 8vo.

[2] *Stadt* is the German equivalent of the English *borough*. F. W. Maitland in *English Historical Review*, xi. (1896) pp. 13, 15. Keutgen, *Untersuchungen über den Ursprung der deutschen Stadtverfassung*, p. 41, Leipzig 1895, 8vo. Schröder, *Lehrbuch der deutschen Rechtsgeschichte*, p. 636, Leipzig 1907, 8vo.

In a Latin chronicle belonging to the Corporation of Axbridge, in the County of Somerset, 'borough' and 'burrow' are treated as mighty man, the king, the magistrate or noble. The one was surrounded by a quickset hedge, the other by ditch and mound. In Scotland the 'toun,'[1] as known in earlier days, was the farm house, or group of farm houses and dependent dwellings attached to a certain area of land, belonging in property to some lord or great man. The 'burgh' was the cluster of homesteads, with a definite territory belonging in property to its own burgesses. As a rule the 'toun' was a dependent, the 'burgh' a free community.

It was in the reign of David I. (1124-53) that burghs first came into prominence. The *Leges Burgorum* were, nominally, regulations observed in four burghs—Edinburgh, Roxburgh, Berwick and Stirling.[2] They are, in fact, a collection of burghal customs which King David recognized and arranged,[3] with some additions

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identical; "For the English word 'borw' is the same in meaning as the Latin *mansio* or *habitatio*; whence it is that at the present day we call the holes made by foxes 'borwys.'" *Historical MSS. Commission*, Third Report, p. 300.

[1] *Dorf* is the German equivalent.

"Villa accipitur pro praedio quodam in rure, cum idoneis aedibus ad reponendos ejusdem fructus." Glossary, p. 51, to Craig, *Jus Feudale*, Edinburgh 1732, fol. This is Spelman's definition. "Waverley learned from this colloquy that in Scotland a single house was called a 'town.'" *Waverley*, ch. ix. See *Old Mortality*, ch. viii. This, too, was the old English practice. Wycliffe uses *toun* for a farm. "The first saide Y have boucht a *toun* and Y have nede to go out and se it." Luke xiv. 18; repeated in *The New Testament in Scots*, i. p. 255 (The Scottish Text Society).

[2] The Sheriffs of Berwick, Roxburgh and Edinburgh represented Scotland in 1249 in collecting the laws and customs of the Marches. *Acts of the Parliaments of Scotland*, i. p. 413.

[3] Several of the laws seem older than the time of King David. Others are more recent. Serfdom and trial by combat are treated as existing

of later date. As a whole they correspond, in many particulars, with similar customs in English boroughs[1] and their equivalents on the continent.[2] Custom grows slowly, and alters slowly, and the existence of the *Leges Burgorum* is evidence that burghal communities had grown up and taken shape long prior to David's time.

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institutions. Pirenne says that the *duellum* was suppressed in many towns in France in the early part of the twelfth century. *Revue Historique*, lvii. (1895) p. 95. Later in the same century William the Lion endeavoured to suppress it in Scottish burghs. *Fragmenta Collecta*, c. 8; Charter of Inverness, *Acts of the Parliaments of Scotland*, i. p. 79.

[1] The customs of Newcastle-upon-Tyne were a principal source of the Burgh Laws. *Acts of the Parliaments of Scotland*, i. p. 39; *Leges Burgorum*, c. 99; *Fragmenta Collecta*, c. 15; Stubbs, *Select Charters*, p. 110; and William the Lion travels as far south as Winchester for a precedent. He granted "to the burgess of his said Kynrik . . . at thai be derenyeit be the law of wynchester, that is, throu the acquittance of xij lele men that ar burgess." *Fragmenta Collecta*, c. 8; *Acts of the Parliaments of Scotland*, i. pp. 41, 720. Cf. *ib.* p. 752. "The olde vsages of the Cite of Wynchestre," see Toulmin Smith, *English Gilds*, p. 349 *sqq.*; *Archaeological Journal*, ix. p. 69; Gross, *The Gild Merchant*, ii. p. 251 *sqq.* Many of the provisions of the Custumal of Preston are practically identical with those of the *Leges Burgorum.* Harland, *Mancestre*, i. p. 182; Dobson and Harland, *A History of Preston Guild*, Appendix, p. 72, Preston [1862], 8vo; "The Custumal of Preston," *English Historical Review*, xv. p. 496.

[2] See *Leges et Consuetudines Novi Castelli super Tinam, temp. Henrici I.*, *Acts of the Parliaments of Scotland*, i. pp. 39-41; Stubbs, *Select Charters*, p. 110; Mary Bateson, *Borough Customs*, 4to, 2 vols. (Selden Society), London 1904-6. An instructive analysis of the charters of English boroughs granted by King John is given by Mr. Ballard in *English Historical Review*, xiv. (1899) p. 93.

As regards France, see Guizot, *Civilisation en France*, Leçon 47^e, *Cours d'histoire moderne*, p. 598, Bruxelles 1839, 8vo. Translated by Hazlitt, iii. p. 303, London 1846, 8vo. Thierry, *Essai sur l'histoire de la formation et des progrès du Tiers État.* Paris 1856, 12mo, 3d ed.;

A learned Scotch lawyer, Mr. Elias Cathcart, was inclined to think that the Burgh Laws were based upon Roman practice, and that, to a considerable extent, they were survivals of Roman institutions in Britain. His view was that their provisions were in advance of the civilization of the period, and that the coincidences between them and the Roman law were so marked that the latter was probably their source.[1]

The word 'burgh' appears in the place-names, Edin-

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translated by Wells, London 1859, 8vo. Pirenne in *Revue Historique*, liii. (1893) p. 52; lvii. (1895) pp. 57, 293; Flach, *Les Origines de l'ancienne France*, vol. ii. p. 213 *sqq.* "La commune urbaine," Paris 1893, 8vo; Hegel, *Städte und Gilden der germanischen Völker im Mittelalter*, ii. p. i. *sqq.* treats of France.

[1] *The History of the Roman Law during the Middle Ages*, translated from the German of Carl von Savigny by E. Cathcart, vol. i. p. lviii. *sqq.*, Edinburgh 1829, 8vo. Mr. Cathcart's dissertation upon the resemblance between our municipal institutions and those of the Romans was translated into German, and appeared in Mittermaier und Zachariae, *Kritische Zeitschrift für Rechtswissenschaft des Auslandes*, iii. pp. 136-146, Heidelberg 1831, 8vo; and into French by Charles Guenoux with his translation of Savigny, *Histoire du Droit Romain au Moyen Age*, iv. Appx. No. 1, p. 287, Paris 1839, 8vo. Mr. Cathcart (b. 1794, d. 1877) studied law and graduated at Leyden. He was called to the Scottish Bar in 1817, and was a candidate for the Chair of Civil Law in the University of Edinburgh in 1826.

Many of the rules embodied in the *Leges Burgorum* are to be found in the municipal laws of many towns in Western Europe. See Gengler, *Codex Juris municipalis Germaniae medii aevi*, vol. i. (all published), Erlangen 1867, 8vo; Gengler, *Deutsche Stadtrechte der Mittelalters*, Nürnberg 1866, 8vo; Hegel, *Städte und Gilden der germanischen Völker im Mittelalter*, Leipzig 1891, 8vo, 2 vols.

"The fundamental principles, especially regarding the election of magistrates, may be traced through the constitutions of the Free Towns of the Continent, back even to those cities which enjoyed their own privileges under the despotism of the Roman Empire, and preserved burgh, Musselburgh, Jedburgh, Roxburgh and Dryburgh, but this use is confined to Anglian Lothian.[1] Edinburgh and Roxburgh were ancient towns in the time of King David, and were two of the burghs whose constitution is represented in the *Leges Burgorum*. Constitutionally Edinburgh and Roxburgh did not differ from many other towns both in the east and in the west of Scotland. Glasgow and Dumbarton[2] can claim greater antiquity than Edinburgh and Roxburgh, and although not described as burghs in King David's reign, must, equally with them, have had burghal constitutions and usages when his commissioners drew up their report on the customs which they found in existence.

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them after its downfall." Cosmo Innes in *Acts of the Parliaments of Scotland*, i. p. 39. See Cathcart, *ut supra*, p. lxi.

Professor Maitland disputes the continuance of Roman municipal institutions in England, *Domesday and Beyond*, p. 173. On the other side see Coote, *The Romans of Britain*, p. 344 *sqq.*; Pearson, *History of England*, i. p. 264 *sqq.*; Seebohm, *English Village Communities*, p. 245 *sqq.*; Wright, *The Celt, the Roman and the Saxon*, pp. 365, 366; *Archaeologia*, xxxii. (1847) p. 298. The same question has been much discussed in Germany. There is no doubt, however, that many German towns are of Roman origin, and that their institutions owe something to Roman law. Schröder, *Lehrbuch der deutschen Rechtsgeschichte*, p. 127. As to France, see Pauffin, *L'Organisation et la juridiction municipales au Moyen Age*, p. 5 *sqq.*, Paris 1886; Pirenne in *Revue Historique*, liii. (1893) p. 54; lvii. (1895) p. 59; Flach, *Les Origines de l'ancienne France*, ii. p. 216 *sqq.*

[1] Fraserburgh, in Aberdeenshire, was only so named in the reign of James VI. Newburgh, in Fifeshire, was created a burgh in 1266, but burghs by this time were common. Colinsburgh, in Fifeshire, is modern.

[2] Dumbarton was, probably, originally a Roman *municipium*. Coote, *The Romans of Britain*, pp. 347, 348, 415, 460, 464 n. Professor Bury doubts whether it was so fully organized, *Life of St. Patrick*, p. 323, London 1905. See *post*, p. 26.

The burghal customs, which pass under the name of the Burgh Laws, were in force and recognized, to a greater or less extent, in all burghs, royal or otherwise.[1] The burgh was an organized self-governing community, with its own courts, and, from the time that seals came into use, expressing its will by means of a common seal. Now-a-days we speak of it as a corporation, and a corporation is in law a juridical or artificial person. While this idea did not exist in early days, the conception of community was understood, and the thing itself existed in various forms, in the tribe, in the family, in co-heirship, in co-ownership, in the township, in the burgh, in guilds and fraternities.[2] The foundation of the burgh was its common property in which the burgesses had certain determinate rights, the possession of which made them a fellowship or community, in which they were united by a common oath. The constitutions of all burghs were similar. The burgesses were king's burgesses, bishop's burgesses, abbot's burgesses, earl's or baron's burgesses, according as the burgh was in the demesne—or what, according to the development of ideas, came to be claimed as the demesne—of the king or of a bishop, an abbot, earl or baron.[3] This determined their relations to the lord of the burgh, but did not affect the relations of the burgesses *inter se*.[1] William the Lion granted to the bishop's burgh of Glasgow all the liberties[2] or franchises and customs (*consuetudines*) which any of his burghs—that is, the royal burghs—throughout the kingdom possessed,[3] and a Memorandum of certain privileges granted to burghs in his reign has been preserved in the chartulary of the bishopric.[4] Alexander II. points out to the burgesses of Dumbarton, in 1242, that the privileges of the burgesses of Glasgow in buying and selling and trading throughout the kingdom existed long before Dumbarton was a burgh.[5] The

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[1] See *Registrum de Passelet*, pp. 382, 385, 389. The *Leges Burgorum* are referred to in an instrument in 1317 (*Miscellany of the Spalding Club*, v. p. 5), and are quoted by Edinburgh and Dundee in 1468 as the recognized code of burgh law. *Council Register of Aberdeen*, 20-27 March, 1468; *Burgh Records of Edinburgh*, 20 March, 1468.

[2] See G. L. von Maurer, *Geschichte der Dorfverfassung in Deutschland*, p. 84 *sqq.*, Erlangen 1865, 8vo; Toulmin Smith, *English Gilds*, p. xxi. *sqq.*, London 1870, 8vo.

[3] *Leges Burgorum*, c. 13. See *Coke upon Littleton*, Sect. 162-164.

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[1] A king's burgess might have combat (*duellum*) of the burgess of an abbot, prior, earl or baron, but not *e converso*. *Leges Burgorum*, c. 13; cf. *Fragmenta Collecta*, c. 8. This does not specifically mention a bishop's burgess, but he was no doubt included, as the relation between bishops and burghs was civil, not ecclesiastical, and depended upon the fact that some temporal lordship was attached to the see and enjoyed by the bishop.

[2] Coote, *The Romans of Britain*, p. 382, refers to a continental charter which defines *libertas Romana* as the right to hold markets and exact tolls.

[3] See *Fragmenta Collecta*, c. 8. The date of the charter was prior to 1181, as in that year it was confirmed by Pope Lucius III. *Registrum Episcopatus Glasguensis*, i. p. 49. See the general rule enacted by King David. *Fragmenta Collecta*, c. 29.

[4] *Ib.* ii. p. 608; *Leges Burgorum*, p. 97, Edinburgh 1868, 4to.

The Memorandum is probably of the reign of William the Lion. *Acts of the Parliaments of Scotland*, i. p. 49.

[5] *Registrum Episcopatus Glasguensis*, i. p. 149. See claim made by Glasgow in the course of its dispute with Dumbarton. *Town Council Minutes*, 19th April, 1666; Marwick, *Glasgow Charters*, ii. p. 62.

As to the freedom of burgesses from tallage and custom when passing with merchandise through other burghs, see Petition by the Burgesses of grant to a burgh of the liberties of a royal burgh conferred upon that burgh the same rights and privileges as those of a royal burgh, although it was not itself created one.[1]

With King David commenced the practice of granting charters to burghs,[2] but no burgh charters earlier than the reign of his grandson, William the Lion, have been preserved.[3] A charter did not in all cases create the burgh.

Scotland to Edward I. *circa* 1303. *Calendar of Documents relating to Scotland*, iv. No. 1834.

[1] See Marshall *v.* Marshall, 13th November, 1623, *M.* 6839; Magistrates of Paisley *v.* Freeholders of Renfrew, 17th January, 1793, *M.* 1833. "Musselburgh, a burgh of regality, possesses all the power and privileges of a royal burgh, with the exception of returning a delegate to the Convention of Royal Burghs." Paterson, *History of the Regality of Musselburgh*, p. 30. The magistrates were entitled to grant infeftment by hasp and staple *more burgi*. They had a burgh register of infeftments, but it fell into disuse. *Ib.* p. 31.

Musselburgh was an ancient town before the Abbey of Dunfermline, on which it was latterly dependent, existed. Cf. *ib.* pp. 20, 21. Simeon of Durham, in the seventh century, calls it Eskmouth. *Ib.* p. 21.

Of Exeter, Professor Freeman says the city is older than the bishopric, because it is older than Christianity itself. Freeman, *English Towns and Districts*, p. 57.

Mr. Cosmo Innes states (*Ancient Laws and Customs of the Burghs*, p. xiii.) that the tenure of property in burghs of barony and regality was less secure than that in royal burghs, but this was not the case.

[2] In Germany the establishing of burghs began in the ninth century. The greater part of the charters conferring the privilege of market were granted between the years 940 and 1070. Keutgen, *Untersuchungen ueber den Ursprung der deutschen Stadtverfassung*, p. 84.

[3] King William's fourth charter to Inverness provides that the privileges it confers shall be enforced, "*secundum assisam Regis David, avi mei.*" Wight, *Rise and Progress of Parliament*, p. 408, Edinburgh 1784, 4to. *Acts of the Parliaments of Scotland*, vol. i. p. 79. The

Its object was rather to confer privileges or franchises on the burgesses beyond those implied in the existence of a burgh.[1] Elgin was undoubtedly a royal burgh in the days of King David, but no charter of erection exists or is referred to, and it is doubtful whether such a charter was ever granted.[2] King William (*circa* 1175-78) granted and confirmed to Bishop Jocelin the right to have a burgh at Glasgow, but this does not necessarily mean that the

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charter of the same king to Rutherglen implies that an earlier charter had been granted by King David, and a recital in the Act, 1661, c. 259 (*ib.* vii. p. 239), states that it was erected into a free burgh in the year 1126. King Malcolm IV. (1153-65) granted a toft in his burgh of Rutherglen to the Abbey of Kelso. *Liber de Calchou*, p. 22.

King John of England in 1199 granted a charter to the burgesses of Dundee, providing that they should be quit of all manner of customs that pertain to the king, except in the city of London. Merewether and Stephens, *History of Boroughs*, i. p. 417, London 1835, 8vo; Stevenson, *Illustrations of Scottish History*, p. 15; *Illustrations of the Topography of Aberdeen and Banff*, iii. p. 403 (Spalding Club); Ballard in *English Historical Review*, xiv. (1899) pp. 96, 102.

[1] See Wight, *ut supra*, p. 36. Toulmin Smith, *English Gilds*, p. xxii. Originally the creation of a burgh was a feudal right, rather than a right of sovereignty, and it was only gradually that the Crown absorbed the rights formerly belonging to great lords. Béchard, *Droit municipal au Moyen Age*, i. p. 228.

[2] King David (1124-53) granted to the monks of Urquhart 20 shillings yearly "de firma burgi mei et aquarum de Elgin." In 1234 King Alexander II. granted a charter to his burgesses of Elgin, for the improvement of his burgh of Elgin, the right to have a merchant guild, and this is the earliest charter the burgh possesses or knows of. Dr. William Cramond thinks that earlier charters must of necessity have been granted, although now irretrievably lost. *The Records of Elgin*, i. p. 7 (New Spalding Club). That is not so. The existence of a burgh is not dependent upon a charter.

burgh was then non-existent.[1] The object of the charter was to add to existing rights; to confer upon Glasgow the rights and privileges pertaining to the king's own burghs.[2]

In its modern acceptation the term burgh is generally associated with the idea of crafts, of trade or commerce. This was not its older meaning. In early times the word merely denoted a certain municipal organization —a community of self-governing freemen, founded on a community of property. A market, a fair, a merchant guild or trade organization might be associated with the burgh, but trading was not the basis of the burgh constitution.

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[1] "It is well understood that the specification of a particular liberty in a charter does not preclude the possibility of its having been enjoyed by custom long before." Hudson and Tingey, *Records of the City of Norwich*, i. p. xix.

[2] *Registrum Episcopatus Glasguensis*, i. p. 36.

The same King (*circa* 1211-14) granted to the Abbey of Arbroath, Arbroath with its whole shire (*schyra*), and the church of the town (*villa*) of Arbroath, and granted to them authority to make a burgh (*licenciam et libertatem faciendi burgum*) and to have a port and a market, every Saturday, on that same land. He further confirmed a former grant that the burgesses who had land or a house in the burgh and resided in the burgh, as also the burgesses of the abbey who dwelt in tofts in the royal burghs, should be free of toll and custom throughout all the land, and that all merchandise which they bought or sold in any of the ports of the country should be free of all exactions. *Registrum vetus de Aberbrothoc*, pp. 3, 14. In 1348 a monk of the abbey was charged a penny at Dundee in name of king's toll. This the abbot maintained was contrary to the charter privileges of the abbey, and the collector on bended knees acknowledged that it was so and restored the penny. *Registrum nigrum de Aberbrothoc*, p. 21.

A similar claim was made by the royal burgh of Renfrew for goods sold in Paisley. James III., in 1488, erected the town of Paisley into a free burgh of barony. *Registrum de Passelet*, p. 263.

The burgh was essentially a community of freemen. Freemen or free burgesses—*liberi burgenses*, *probi s. boni homines*,[1] the "good men" of the town,[2] as they are still styled—alone had any rights in the burgh property. They only were entitled to enjoy its privileges and to participate in its government.[3] Freedom, in this sense, it need hardly be explained, did not refer to personal liberty, as we use the term,[1] but to privilege, the enjoyment of the full rights of citizenship,[2] corresponding to the status of a *civis optimo iure* amongst the Romans, the *decurio* of later times.[3] There might be dwellers in the burgh who were free, in our sense of the term, but who were not freemen or burgesses, just as now we have citizens of Glasgow who have not the freedom of the city.[1] But beneath these there was a class of thrylls (*servi*)[2] and bondes, bond-men or kynde-borne bondmen (*nativi*, *nativi-servi*)[3] who were bound to the soil, and passed with it, and by whose forced labour it was partly cultivated. The thryll could own no land, "an thryll man may haf nan heritage"; his son by a free woman could not inherit through his mother; "The wyff deis may the sone recouer the heretage? Nay he sal nocht forby that he was gottyn wyth that throllys body at is dede."[4] But if a thryll could obtain a burgage and dwell in it for a twelve-month and a day without challenge of his lord he became a free burgess;[1] not because the burgesses esteemed personal liberty and condemned slavery, but because additional population was of advantage to the burgh,[2] and because the burgh, being a free self-governing community, would not permit interference by an outsider.[3] Whether thrylls existed in burghs so recently as the reign of David is not certain, but in rural districts they are found at a much later date. There are numerous references to them in the Burgh Laws and in the chartularies of the religious houses.[4] Monks and bishops bought them and sold

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[1] *Leges Burgorum*, c. 70. According to Savigny *bonus homo* is a translation of ariman, = freeman. Savigny, *History of the Roman Law in the Middle Ages*, by Cathcart, vol. i. pp. 203, 204, 235. Guizot takes *probi homines*, *boni homines*, *bons hommes*, *prud'hommes*, as the equivalent of the old Roman senators. *History of Civilization*, iii. pp. 307, 308. (London 1846.)

[2] "Lez bons gentz de la ville," in Norman French.

Originally the jurors must be freeholders. "Assise proborum̄ ville." "Per hos probos et fideles patrie . . . juratos." "Per hos probos et fideles comburgenses." "Per sacramentum trium vel quatuor proborum et fidelium hominum," = "be y^e aithis of iij or iiij worthi and leill men." *Statuta Alexandri II.* c. 14. *Acts of the Parliaments of Scotland*, i. p. 403. A dispute which the Abbot and Convent of Melrose had with regard to the boundaries of the forest of Wedhale was determined in 1184 "per xij fideles homines." *Chronicon de Mailros*, p. 93. "Good men of inquest, unto your wisdoms say I" is the style of the old form of addressing a jury in Scotland. The expression is old: "the aldermane gert inquer at the gud men of the towne than beand in the tolbuith," 20 November, 1444. *Extracts from the Council Register of Aberdeen*, 1398-1570, p. 399; again, 13 December, 1444. *Ib.* p. 12.

[3] "They [the freemen] kept their rights to themselves. Mere residence went for as little as in an old Greek commonwealth. The non-freeman remained a sojourner to the ninth and tenth generation. In fact the freemen of any English town exactly answer in their origin to the patricians of Rome or of any other Italian town." Freeman, *Historic Towns. Exeter*, p. 60.

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[1] See *Assise Willelmi Regis*, c. 39; *Leges Burgorum*, c. 14; *Fragmenta Collecta*, c. 29, 34.

"A great many words have changed their meaning. The word *liberty*, for example, had at bottom among the ancients the same meaning as the word *dominion*. *I would be free* meant, in the mouth of the ancient, *I would take part in governing or administering* the State; in the mouth of a modern it means, *I would be independent*. The word *liberty* has with us a moral sense; with them its sense was purely political." Matthew Arnold, *Essays in Criticism*, "Joubert."

The word "Immunity" as used in the Middle Ages meant that those who shared it were free of certain burdens. Men and things were divided into *immunes* and *subjecti*. Men in the relationship of service were servants of a feudal lord; others were free, subject only to the Emperor and the State. *Freedom* signifies in general *immunity*. Roszhirt, *Geschichte des Rechts im Mittelalter*, i. p. 285 n., Mainz 1846, 8vo. Cf. G. L. von Maurer, *Geschichte der Dorfverfassung in Deutschland*, i. p. 352, Erlangen 1865, 8vo.

[2] Of freedom as we know it the members of these old communities had no conception. "Even the free in name were virtually bound down to the soil, with the possession of which their rights were connected and from which their subsistence was derived. . . . In fact the spirit-stirring language of the Beverley charter—

'So much freedom give I thee
As heart may wish or eye may see'

must be qualified by the consideration that freedom was only another word for privilege. The rights to enjoy old customs, to trade without a tax, to administer jurisdiction within a certain district, to enforce the laws of the trade monopolies, were the liberties for which our ancestors struggled." Pearson, *History of England during the Early and Middle Ages*, i. p. 289. See Stubbs, *Constitutional History*, i. p. 88.

[3] Savigny, *History of Roman Law during the Middle Ages*, by Cathcart, i. pp. 23, 175, 276.

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[1] It is not clear whether there were not burgesses who had certain rights, although not the full rights of freemen. Thus, *Leges Burgorum*, c. 70, the burgh reeves (*prepositi*) are to be elected by the freemen (*probi homines*); c. 71, the serjeants (*praecones*) by the burgesses (*burgenses*).

[2] *Servus* = thryll, *Leges Burgorum*, c. 15.

[3] *Assise Willelmi Regis*, c. 34; *Nativi* = "kynd born men," strictly were born-bondmen, or natives of their gud-sher or grand-sher (*nativi de avo et proavo*), whom their lord might claim to be his *nativi naturaliter*, by mentioning their progenitors. *Quoniam Attachiamenta*, c. 39. (Skene, c. 56.) In the Scots version of the *Regiam Majestatem*, *nativus* = bondman or native bondman. According to Seebohm, *The Tribal System in Wales*, Index, *nativus* is the Norman rendering of the Cymric *alltud* or non-tribesman. "Inborn men" is the old translation of a charter of 1312 in the Register of the Abbey of Scone. *Liber Ecclesie de Scon*, p. xix.

This of course is a restricted sense of the word *nativus*. In its general sense it was used in a curious manner in the Middle Ages by being placed in apposition to *dativus*. Adam was *dativus* because he was simply created by God. Other men, born of a father and a mother, are *nativi*. Bartolus on *Dig*. 2. 14. 7, § 2; *Opera*, i. p. 97^b, Lugduni 1555, folio.

[4] *Fragmenta Collecta*, c. 31. *Acts of the Parliaments*, i. p. 753.

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[1] *Leges Burgorum*, c. 15; *Regiam Majestatem*, ii. 9; *Articuli inquirendi in itinere Camerarii*, c. 40. The custom of Newcastle was the same. *Acts of the Parliaments of Scotland*, i. p. 40. Cf. Glanvil, *De legibus et consuetudinibus Anglie*, v. 5. *Infra*, p. 21.

"Stadtluft macht frei" is the German maxim. Brunner, *Grundzüge der deutschen Rechtsgeschichte*, p. 89, Leipzig, 1905, 8vo; Lamprecht, *Deutsches Wirtschaftsleben im Mittelalter*, i. pt. 2, p. 1154, *ib.* 1886.

[2] This privilege was said to be granted for the improvement of the royal boroughs and the profit of the King. *Britton*, by Nichols, I. c. xxxii. §§ 8 and 24. The new burgess was bound to build upon his burgage. *Leges Burgorum*, c. 27. Béchard, *Droit municipal au Moyen Age*, i. p. 230.

[3] Bracton says, that if a serf has lived in a privileged township (*in villa privilegiata*) or in the demense of the lord the King, for a year and a day, without being claimed, his free *status* alone in the first case defends him in the assise, and in the second his privileges defend his free *status*, when he is claimed into serfdom by a writ of naifty. *De legibus Angliae*, iii. p. 292, ed. Twiss.

[4] See, for instance, *Registrum de Dunfermelyn*, pp. 13, 17, 36, 37; *Liber Cartarum S. Andree*, pp. 199, 263, 278; *Illustrations of the Topography of Aberdeen and Banff*, ii. p. 18; *Quarterly Review*, lxxii. p. 396.

Robert III. in 1396 erected the lands of the Abbot and Convent them, used them to till their fields, to herd their flocks, to cut their wood and gather in their hay.[1]

> "What sayst thou plowman?
> How dost thou do thy work?
>
> Oh, my lord, hard do I work. I go out at daybreak driving the oxen to field, and I yoke them to the plough. Nor is it ever so hard winter that I dare loiter at home, for fear of my lord, but the oxen yoked, and the ploughshare and coulter fastened to the plough every day must I plough a full acre, or more. . . . I must fill the bin of the oxen with hay, and water them, and carry out the dung. Ha! ha! hard work it is, hard work it is! because *I am not free*."[2]

We need not travel far to find an example of serfdom. King William the Lion (1165-1214) by charter, quit-claims

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of Paisley into a barony and regality "cum bondis, bondagiis, nativis et eorum sequelis." *Registrum de Passelet*, p. 91.

As late as 1747 it was maintained that colliers who were burgesses were nevertheless practically slaves, and could not therefore vote in burgh elections. The Burgesses of Rutherglen *v.* Leitch, 20 February, 1747, *M.* 1841 : Elchies, *Decisions*, s.v. Burgh Royal, No. 26.

[1] In 1388 the chapter of Aberdeen "set and in tack let the whole barony of Murthil with its hawkings, huntings and fishings, with its serfs, bondages, natives and their issue." *Registrum Aberdonense*, i. p. 183. Barbour, the author of the well-known lines beginning

"A! fredome is a noble thing,"

was archdeacon of Aberdeen at the time and consequently a party to this lease. In a lease of the same barony in 1402 the serfs are omitted. *Ib.* p. 205. See "Slavery in Scotland," by Joseph Robertson. *Deliciae Literariae*, pp. 252-270, London 1840, 12mo.

[2] Dialogue of Aelfric, of the ninth century, quoted by Seebohm, *The English Village Community*, p. 166; and Kemble, *The Saxons in England*, i. p. 96.

Barbour, *The Bruce*, Book i. 240, 269 and elsewhere, has many allusions to thrylls and thryldom, but in the general sense of slaves and slavery (thraldom), not to an existing institution in Scotland.

to God and the Church of St. Mungo of Glasgow, and to bishop Jocelin, and his successors for ever, Gillemachoi of Conglud, on the confines of Glasgow,[1] with his children and followers (*tota eius secta*), which by relationship (*de ratione*) pass with him.[2] The original slaves of the English were, it has been supposed, the vanquished Britons.[3] Gillemachoi, as his name shows, was a Briton[4] while Jocelin was a Norman, so that here too the older was passing into the inferior race.[1] The lands outside the burgh of which the bishop was lord,—Barrowfield, Carmyle, Kenmure, Shettleston, Haghill, Possil, Cowcaddens, Woodside, and Govan—were mostly occupied by bondmen, or kynd-borne men,[2] passing in later times into kindly tenants or rentallers.[3]

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[1] Cunclut, Cunclud, Conglud or Conclud has been assumed to be the same as Kynclaith (Hamilton, *Descriptions of Lanark and Renfrew*, p. 159, Glasgow 1831, 4to; *Northern Notes and Queries*, p. 420, Glasgow 1852, 4to), but this is not quite certain. Conclud was undoubtedly extra-burghal. It is named in the *Inquisitio*, which deals only with lands outside of the burgh of Glasgow. *Registrum Episcopatus Glasguensis*, i. p. 7. See also *ib.* pp. 43, 50, 55, 94, 147, where Conclud is distinguished from the *terra burgi.* Kynclaith was nearly all within the burgh, and is now included in the area of Glasgow Green. Eight acres of it, at the east end, are without the burgh, and were brought within the royalty, in 1800, by the Act 39 and 40 Geo. III. c. 88. In the various lists of the lands belonging to the bishopric Conclud is associated with Cadder, Shettleston and Dalmarnock, and apparently lay somewhere to the east of the burgh of Glasgow and may even have been beyond Shettleston.

[2] *Registrum Episcopatus Glasguensis*, i. p. 32; cf. *Lex Salica*, c. 60. In 1225 King Alexander quit-claimed to Bishop Walter certain serfs on the lands of Stobo. *Ib.* p. 110; cf. p. 143 (1235).

[3] Kemble, *The Saxons in England*, i. p. 193.

[4] The appearance of the ancient Briton of this district during the Roman period is portrayed on a sculptured stone found in 1868 at Arniebog in the parish of Cumbernauld. John Buchanan, *Transactions Glasgow Archaeological Society*, i. p. 122; ii. p. 68; *P.S.A. Sco.* ix. p. 473; Sir Arthur Mitchell, *The Past in the Present*, p. 244 *sqq.* But such representations are not to be taken as photographs. The Greeks on their monuments represented barbarians in a conventional costume, so that monuments must not be accepted as showing actual dress. The same probably applied to physical characteristics. *Mémoires de l'Institut*, xxxv. (1893) p. 73.

Burgesses were either resident, or were, to use the old phrase, either upland (uplandis men)[4] or furth-dwelling, that is non-resident (*forinseci*, *extranei*, *foris manentes*, *rure manentes*),[5] but in either case their qualification, borrowage or burgage (*burgagium*)[1] was the holding of a rood of land, at the least, within the burgh.[2] In this, the advocates of the permanence of Roman institutions find a resemblance to the decurions of the Roman municipalities. The *decurio* represented the full citizen, who required to be resident and to possess property within the municipality. There were also non-resident citizens who possessed such property, and there thus came to be two classes of taxable property.[3]

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[1] As to the influence of the Normans and their progress in Cumbria see Skene, *Celtic Scotland*, i. pp. 456, 457.

[2] *Genere* = Kynd, *Liber Ecclesie de Scon*, p. xix.

[3] "The landes rounde about the space of 4 or 5 myles perteines to the Archbishope; of quhilkes the rentes hes nocht bene takne frome the heires thir thousand yeiris and mair. Mairouer that in the same haeritage, Ilke hes rychteouslie from age to age succeidet till vther, that worthilie thay may be called perpetual heires." Leslie, *Historie of Scotland*, translated by Father James Dalrymple, i. p. 17 (Scottish Text Society); Craig, *De Feudis*, i. Dieg. 11, § 24.

See what George Buchanan says regarding the oppression of the husbandmen (*agricolae*) of his extensive barony by Bishop John Cameron (1426-46). *History of Scotland*, Book xi. p. 207, ed. Ruddiman, 1715; Bond's Translation, ii. p. 23; and Pitscottie, *History of Scotland*, p. 27, Edinburgh 1728, fol. p. 69; *ib.* 1814.

[4] Cf. Alexander Barclay, *The Cytezen and Uplandyshman* (Percy Society).

[5] *Leges Burgorum*, cc. 3, 5, 12, 29, 32 and elsewhere. In Aberdeen the two classes are referred to as "outeburges" and "inburgessis," and non-burgesses as "indwellaris." 13 September, 1479, *Extracts from the Council Register of Aberdeen*, 1398-1570, p. 37: 30 December, 1513, *Ib.* p. 87. In Glasgow the non-residents were also called "owtintownes burgessis," *Burgh Minutes*, 6th October, 1574, 25th October, 1578. In

It has been maintained by some that, in theory at least, it was the tie of blood that united the community.[4]

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the old translation of the *Iter Camerarii*, c. 3, *inhabitantes* and *forinseci* are translated "*forrenys*" and "*deynseens*."

[1] *Burgagium* was a term of art—"burgagium meum infra burgum Glasguensem in vico qui dicitur Ratounraw," 1283, *Registrum de Passelet*, p. 382, "Burgagium in predicto burgo Glasguensi in vico qui dicitur Vicus Pischatorum" (The Fishergait or Stokwell). *Ib.* p. 400, "burgagium infra burgum de Renfrew," 1399. *Ib.* p. 374.

With the burgage compare the *bina jugera* of the Roman *centuria*. Beaudouin, *La limitation des fonds des terres*, p. 12, 1894, 8vo.

[2] *Leges Burgorum*, c. 49 ; cf. c. 1 ; Houard, *Anciennes loix des François*, i. p. 236.

Two persons could not have the freedom of the burgh in respect of the same burgage. *Fragmenta Collecta*, c. 11.

[3] Savigny, *The History of the Roman Law in the Middle Ages*, by Cathcart, p. lix ; Coote, *The Romans of Britain*, pp. 350, 368, 376.

[4] The *Regiam Majestatem* provides (ii. 5) that if one who affirms himself to be a freeman produces divers and sundry of his kinsmen descended of the same stock with himself (*de eodem stipite*), whose liberty is known or proved in court by an assize, then he shall be made free. Subsequent sections give directions for ascertaining whether the kinsmen, who are produced, be free or not, and the judgment which is to pass in consequence.

Very similar procedure is found in the Merovingian, *Formulae Andegavenses*, No. 10. Walter, *Corpus juris Germanici antiqui*, iii. p. 503.

Whether this be well founded it is impossible to say. In historical times succession by descent prevailed and was carefully safeguarded. Land and freedom descended from father to son, was transmitted from wife to husband and children, and then to collaterals. Transmission to a stranger was, however, recognized. A stranger could, by allowance of the freemen, be admitted to share in the land and freedom of the community by the purchase of a qualification.[1] "Na man sall bruke the libertie and fredome of the burgh bot gif he haue ane land inhabit and streinzeable (*vnam terram hospitatam et distringibilem*) within zeare and day after his entres"; that is he must not only possess the burgage qualification but his land must be built upon.[2] The house was, however, merely a wooden structure of a simple character, easily put

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See Fustel de Coulanges, *L'Alleu et le domaine rural*, p. 358, Paris 1859, 8vo.

There was the converse case in the constitution of Freiburg im Breisgau. If a serf had settled in the town, and, being claimed by his lord, disputed his title, the lord was bound to prove his claim by his seven nearest kinsmen (*cum septem proximioribus cognatis*). Gengler, *Deutsche Stadtrechte des Mittelalters*, p. 126.

[1] When he was so admitted, and held the land for a twelvemonth and a day, without challenge, his possession was good against any claimant who had been within the kingdom during the period and was of full age and had not raised a question. *Leges Burgorum*, c. 10. See the charter by Henry II. in favour of the borough of Nottingham (1155-65). *Records of the Borough of Nottingham*, p. 2, London 1882, 8vo. *Infra*, c. x.

The husband of an heiress after her death enjoyed her burgage during his lifetime, if a child had been born of the marriage. *Leges Burgorum*, c. 41.

[2] "Curia Quatuor Burgorum," c. 2; *Acts of the Parliaments of Scotland*, i. pp. 195, 703. *Articuli inquirendi in itinere Camerarii*, cc. 36, 63.

up;[1] and as easily pulled down when the community desired to inflict punishment.[2]

When we first come to know the burghs from record the burgh property was not wholly held by the resident burgesses, but considerable portions of it belonged to barons, bishops and religious houses. Thus about the year 1120 the Abbey of Kelso had a ploughgate of land and a tenement (*mansura*) in Berwick and another in Roxburgh;[3] the Abbey of Scone had a tenement (*mansio*) in each of the burghs of Edinburgh, Stirling, Inverkeithing, Perth and Aberdeen.[4] About the same time the Abbey of Dunfermline had a tenement (*mansura*) not only in Dunfermline, but also in each of Berwick, Roxburgh, Linlithgow, Stirling, Perth and Edinburgh.[5] In 1158 King Malcolm IV., confirming a charter of King David, his grandfather, granted to Walter the Steward a plenary or complete toft (*unum plenarium toftum*) in every one of his burghs for building a house thereon (*ad hospitia*) with twenty acres of land.[6] About the same time the Abbey of Lindores had a toft in Dundee, and a plenary toft in each of the burghs of Berwick, Stirling, Crail, Perth, Forfar, Montrose and Aberdeen, as also the land called the Isle, and another land in the town (*villa*) of Perth, all held in free burgage.[1] The fact that a burgage tenement was owned by a bishop, an abbot or other ecclesiastical person, did not deprive it of its burghal character. It remained burgage and subject to the jurisdiction of the burgh.

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[1] Dobson and Harland, *History of Preston Guild*, pp. 47, 74.

[2] *Fragmenta Collecta*, c. 3. Thierry, *History of the Tiers Etat*, ii. p. 168; *E.H.R.* xv. 503. Round, *Feudal England*, p. 552.

[3] Between 1124 and 1153, *Liber de Calchou*, p. 25.

[4] *Liber Ecclesie de Scon*, p. 2. It has been suggested by Sir Archibald Lawrie that this charter is spurious.

[5] *Registrum de Dunfermelyn*, pp. 5, 6.

[6] *Acts of the Parliaments of Scotland*, i. p. 93.
The adjective *plenarius* is used of areas and other measures to show that the full or exact quantity is meant, as here, *plenarium toftum*, s.

The newly entered burgess must, in the case of a royal burgh, swear fealty to the king and to the community, and a similar oath was required of the burgess of other burghs. "Wha ever he be is made new burges of our lorde the Kyng, he sall swer fewte to our lorde the Kyng and to his bailyeis (*ballivis suis*), and to the communyte of that burgh in which he is made new burges."[2] This undertaking by each member has been suggested as the origin of the burgh community itself, in other words, it is suggested that the burgh was an association for mutual protection (*Schutzgilde*).[3]

The freeman had his duties as well as his privileges. He was bound to defend his burgage, to have his arms in readiness, and to be prepared to resist the assault. "In ilke house wythin the burgh, thar sal ane wachman be haldyn to cum furth when that the wakstaff[4] gais

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plenaria tofta, *plenaria mansura*, *plenaria acra*, *plenaria carrucata*, and similarly of other things, *plenaria forisfactura*, *plenaria potestas*, *plenarius consensus*, *plenariae decimae*. A corresponding term is *integer*, *e.g. mansus integer*. *Cartulaire de l'Abbaye de Beaulieu*, p. cii, Paris 1859, 4to. It is as old as Marculfus. *Formulae*, i. 14.

[1] *Liber Sancte Marie de Lundores*, pp. 9, 39.

[2] *Leges Burgorum*, c. 2. Cf. "Juramenta Officiariorum," *Ancient Laws and Customs of the Burghs*, p. 127.

[3] Wilda, *Das Gildenwesen im Mittelalter*, Halle 1831, 8vo.

[4] The wakstaff (*baculus vigilie*) was the baton of command, or botwand,

fra dure to dure, wha sal be of eylde, and sal gang til his wache wyth tua wapnys, at the ryngyng of the courfeu, and sua gate sal wache wysly, and besily til the dawyng of the daye."[1]

The life, the sovereignty of the burgh was solely in the freemen. Thrice in the year, coinciding with the great festivals of the church, the freemen of the burgh assembled in their head mutes or courts,[2] under the open sky, by the

the symbol of authority. Du Cange s.v. *Baculus* refers to a *baculus signatus* in use at Marseilles and Avignon to summon the people to court.

The Wand of Peace was the symbol of authority of the burgh serjeant (*infra*, c. xi.). So too in Beverley no burgess could be summoned to the borough court, except by a sworn bailiff carrying a rod (*virga*). *Beverley Town Documents*, p. 9 (Selden Society).

Sir Francis Palgrave (*The English Commonwealth*, i. p. 142) enumerates some of the tokens used for summoning the mutes; and (*ib.* ii. p. clix) quotes from Morant (*History of Essex*, i. p. 126) a curious account of the wardstaff of Ongar, and of the service due by those who held their lands by service royal to watch and ward the staff.

[1] *Leges Burgorum*, c. 81. See *Articuli inquirendi in itinere Camerarii*, c. 52; *Iter Camerarii*, c. 4. The common burdens of the burgh lands are scot, lot, watch and ward, and giving suit to the courts of the burgh. Dixon *v.* Lawther, 1 Feb. 1823, 2 S. 176.

The ringing of the curfew was not peculiar to England. See Du Cange, *Glossarium*, s.v. Ignitegium. It was not introduced into England by William the Conqueror, but probably was more rigidly insisted upon in his time. See Freeman, *Norman Conquest*, ii. p. 185, Oxford 1875, 8vo; Brand, *Popular Antiquities*, ii. p. 220, London 1854, 8vo.

In 1442 "the dusane and the counsale of the town" of Edinburgh "ordanit that the towne be waket ilk nicht with sex persouns watches this winter . . ." and "that the yettis of the towne be closit . . . ilk nicht at *couerfure* tyme." *Burgh Records of Edinburgh*, 24th November, 1442; *Burgh Records of Aberdeen*, 27th October, 1503.

The practice no doubt passed from England to Scotland. The law above quoted is probably therefore later than the Conquest.

[2] *Leges Burgorum*, cc. 40, 75, 86; *Statuta Gildæ*, c. 47.

light of the sun,[1] upon the mute-hill[2] or by some sacred tree or old memorial pillar.[3] These mutes existed from the earliest time. In the *Tripartite Life of St. Patrick*

On the subject generally, see Grimm, *Deutsche Rechtsalterthümer*, ii. p. 411 *sqq.*, Leipzig 1899, 8vo. Palgrave, *The English Commonwealth*, i. p. 138; ii. pp. cxliv, clii.

[1] Mr. Flinders Petrie suggests that the Senate House in Rome was the successor of an open-air place of assembly, which was the centre of life in Aryan communities. In those Italian towns which have retained the plan of the primitive town, the piazza on the site of the old public place regularly adjoins the main street, as the Senate House faces on the Via Sacra. *The Athenaeum*, 1st April, 1899, p. 408.

In pre-Christian times the assembling of the people on the mute-hill was, it is said, a religious act, and the decision of the mute, there given under the open sky, was regarded as the voice of God, to be obeyed by all who heard it.

It was a question in old Scots law whether it was legal to pronounce a criminal sentence in the night time. The better opinion was that a judge ought to pass sentence in open day. Mackenzie, *Laws and Customs of Scotland in matters criminal*, p. 287. This may be a tradition of the mute hill.

[2] Muthill = *colliculum actionum sive querelarum*. Craig, *De Feudis*, Dieg. 3, 7, § 19. See also the Glossary to the Edinburgh edition, 1732, fol. "Quhen King Malcolme the second gave all his landes to the barronnes of this realme, he reteined to himself 'montem placiti de Scona,' the mute hill of Scone, quhair he might hald his courtes and do justice to his subjects in deciding their pleyes and controversies." Skene, *De verborum significatione*, s.v. "Mote"; *Regiam Majestatem*, pp. 1 *recto* and *verso*, 108 *verso* (Latin edition); *Acts of the Parliaments of Scotland*, i. p. 709; Fordun, *Chronica Gentis Scotorum*, iv. 143. The *Leges Malcolmi Secundi* are a compilation probably of the fourteenth century.

[3] In 1468 certain lands in the barony of Cluny, Aberdeenshire, are granted "faciendo tres sectas ad tria placita capitalia tenenda apud *le graystane de Cluny*." *Illustrations of Topography of Aberdeen and Banff*, ii. p. 48.

we read that the Britons had a great folkmote. St. Patrick went to the folkmote with his foster mother and his foster father ; and it came to pass that his foster father died in the folkmote. Where this folkmote was held is not recorded, but it may have been in Glasgow, for although Alcluith or Dumbarton was the seat of the king, Glasgow was the centre of ecclesiastical authority, and in St. Kentigern's day the king seems to have travelled often from Dumbarton to Glasgow. But be this as it may, the folkmote as well as the burgh mote was an ancient institution.[1]

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[1] *The Tripartite Life of St. Patrick*, ed. Whitley Stokes, pp. 15, 435, Lond. 1887, 8vo. 2 vol. ; *Anecdota Oxoniensia Lives of Saints from the Book of Lismore*, ed. Whitley Stokes, pp. 4, 152, Oxford 1890, 4to.

There can be no reasonable doubt that St. Patrick was born at or near Dumbarton. See Todd, *Life of St. Patrick*, p. 356 ; Whitley Stokes, *Tripartite Life*, *supra*, i. p. cxxvii ; G. T. Stokes, *Ireland and the Celtic Church*, pp. 36, 37 ; Coote, *The Romans of Britain*, p. 415.

Professor Bury has examined the question with great care (*Life of St. Patrick*, pp. 16, 190, 191, 323-325) ; but he brings no substantial objection against the statement of the glossator of the eleventh century of the Hymn of Fiacc, who identified Nemthur with Ail Cluade, the Rock of Clyde at Dumbarton. Mr. Bury agrees (p. 192) that Coroticus lived at Dumbarton ; and Patrick's Letter against this ruler suggests very plainly that he was writing to one who was amongst his own people. His difficulty is that in this letter Patrick refers to his father as having been a *decurio*, and there is no evidence, he thinks, that there were Roman towns with municipal constitutions in Strathclyde. The objection does not seem to have much weight. That there were Roman settlements is admitted. To conclude that they were not fully organized, because we do not know their constitution, is an unnecessary and illicit assumption, and other writers conclude that there must have been *decurions* at Dumbarton at the close of the fourth century. George T. Stokes, *Ireland and the Celtic Church*, p. 37, London 1888, 8vo. See Coote, *The Romans of Britain*, p. 357 *sqq*. Too much is not to be made of the use of particular words by the early chroniclers, Every burgess (*burgensis*), resident or upland, was bound to attend, to confer regarding the business of the

but it may be noted that Alcluith is termed *urbs* by Gildas when he refers to Kair Eden as a *civitas*. *Historia Gildæ*, Praefatio. So too Bede speaks of "urbs Alcluith," *H.E. Gentis Anglorum*, i. 12. This at least suggests that Dumbarton was an organized community. Professor Bury assumes that *decurions* were to be found only in large and fully organized communities; but this is contrary to the fact. Salvianus (*De gubernatione Dei*, v. 4), writing in the fifth century, attributes *curiales* (*decurions*) to places of small extent (*vici*); and from later evidence it appears that the civic constitution might exist in a mere *castrum*. Savigny, *History of the Roman Law in the Middle Ages*, by Cathcart, i. p. 60.

It is to be kept in view that in the various Lives of St. Patrick his father is styled a *diaconus*, not a *decurio*. If he were a *diaconus* only, Professor Bury's difficulty—even assuming it to be well founded—as to the municipal constitution of Dumbarton disappears.

Professor Bury also finds a difficulty in the fact that in the *Confession* St. Patrick states that he was born *in vico Bannauem taberniae*, and that there is no place so called in Scotland. He rejects the suggestion (Haverfield in *English Historical Review*, x. p. 711) that the reference is to the place of a somewhat similar name near Daventry. In his preface he mentions that there are three places in Glamorganshire named Banwen, which may represent Bannauenta. The traditional place of St. Patrick's birth is Kilpatrick, the parish adjoining Dumbarton, and a little to the east of the village, near Castlehill, a station upon the Roman Wall, there is a *villula* named Bannachtan, which better represents Bannauem than those places which Professor Bury has selected. Bannachtan is a 25s. land of old extent in the lordship of Carconnel. In 1501 it was granted along with other lands by Matthew, Earl of Lennox, to Walter Logan. *R.M.S.* 1424-1513, No. 2648. In 1512 it belonged to John Logan, and was occupied by two tenants. In that year he sold it to Robert Livingstoun. *Diocesan Registers of Glasgow*, ii. p. 460. John of Banachtyn, a bailie of Dumbarton, was one of the twelve representatives of that burgh who met a corresponding number of representatives of the burgh of Renfrew in the Kyrk of Saynt Patrick on community when summoned by the mute-bell or trumpet,[1] or by tuck of drum,[2] and to keep secret its counsel;[3] "The

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the day of the decollation of Saint John the Baptist, 1424. Hamilton, *Descriptions of Lanark and Renfrew*, p. 282. It was at Castlehill that the well-known altar dedicated *Campestribus aeternis Britanniae* was found. This station is about two miles east of Duntocher, where many Roman remains have been found, showing that it was a place of importance, with comfortable villas. See Map, where it is spelt *Balnauchton.*

Whether the identification be correct or not is immaterial. It is impossible to identify the greater number of the places mentioned by Ptolemy, to say nothing of the puzzling lists of the Anonymous Geographer of Ravenna. Ptolemy mentions Banatia (Βανατία) as one of the towns of the Vacomagi, probably at Buchanty on the Almond in Perthshire. Skene, *Celtic Scotland*, i. p. 75. Bendothy, in the eastern part of Perthshire, appears on record under the names Bennathy, Bendauchty, Bendachim, Bendhautin, Bennachtan, Bendachtin, and other forms. *Registrum de Dunfermelyn*, pp. 394, 133, 51, 74, 151, 156, 175, 214, 215, 373, 419. There is also Banevin in Gowrie. *Acts of the Parliaments of Scotland*, i. p. 95; *Registrum de Panmure*, ii. p. 132. These instances show that Bannauem taberniae, or Bannauenta, was a common type of place-name in Scotland.

[1] Blount, *Law Dictionary*, s.v. Mot-bell. The motes at Bury St. Edmunds were summoned by the mot-horn. *Chronicle of Jocelin de Brakelond*, pp. 54, 136 (Camden Society). Cf. *Statuta Gildæ*, c. 17; Von Maurer, *Dorfverfassung*, ii. p. 84 *sqq.* In Belgium the right to erect a belfry and to summon the town council by bell was a privilege conferred on royal boroughs (Reichsstädte). Béchard, *Droit municipal au Moyen Age*, i. p. 360. Pirenne, *Revue Historique*, lvii. (1895), p. 301. When Laon was suppressed by Philip of Valois in 1331, the bell and the town seal were formally destroyed. Green, *Town Life in the fifteenth century*, i. p. 154.

Palgrave, *The English Commonwealth*, i. p. 142, enumerates various methods of convening the mutes.

[2] *Statuta Gildæ*, c. 17. Kennedy, *Annals of Aberdeen*, i. p. 13.

In Glasgow a usual expression was "Ordains ane bank to be sent throw the toune be touk of drum."

[3] *Statuta Gildæ*, c. 39. *Burgh Records*, 11 June, 1574. See the form

saide day the alderman, ballies, counsaile and comunitie present for the tyme, warnit be the hand bell throu the haill towne," is the style of the record.[1] At these mutes new members were admitted to the freedom of the community; all questions regarding the common property of the burgh were determined; its marches were perambulated; bye-laws and regulations were made. As it would appear that a woman could hold a burgage, she must *ipso facto* have been a burgess, and may therefore have been entitled to vote in town meetings.[2]

The first of these mutes was held after the feast of St. Michael—the Michaelmas head court; the second after Yule, and the third after Pasch or Easter.[3] At the Michaelmas mute burgh-reeves[4] (*prepositi*) were

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of Burgess Oath in the "Juramenta Officiariorum" in *Ancient Laws and Customs of Scotland*, p. 127; Cleland, *Annals of Glasgow*, ii. p. 304.

[1] *Burgh Records of Aberdeen*, 4 June, 1503. This refers to special, not to statute meetings. See *infra*, c. x.

[2] This was the case in French towns. Pauffin, *L'Organisation et la juridiction municipales au Moyen Age*, p. 20.

"Omnis mulier viro parificabitur et e contra," Freiburg im Breisgau. Gengler, *Deutsche Stadtrechte des Mittelalters*, p. 126. In Sir John Skene's edition of the *Leges Burgorum* there is an express exception of widows from watching in burghs, save in certain cases, but this is omitted in the Record edition, c. 81. It seems, however, to have been the law. *Articuli Inquirendi*, c. 52.

[3] As to the Whitsuntide Court, see *History of Reynard the Fox*, ed. Thomas, p. 2 (Percy Society).

[4] "The burrow greff and burgess of Lanark," "The burrow greffis and burges of Edinburgh," "The burrough greffis and burges of Aberdeen." *Fragmenta Collecta*, cc. 17, 18, 19.

As to the reeves and their duties, see *Munimenta Gildhallae Londonensis, Liber Custumarum*, pp. 634, 635.

At the Michaelmas Folkesmot in London, sheriffs were elected; at elected by counsel of the freemen (*probi homines*), the gud men or worthy men of the toun (*villa*);[1] or "the wyt of the toun" as they are occasionally called.[2] Serjeants[3] (*praecones s. servientes*) were chosen by all the burgesses. Ordinary courts were also held, at which the burgh reeves presided. The record runs thus:—"Oliver and Richard Smalhy, burgh reeves (*prepositi*), and the other burgh reeves (*prepositi*) and citizens of Glasgow assembled in the mutes (*placita*)[4] of the burgh, which were held at Glasgow on Tuesday, on the morrow of the Feast of the Exaltation of the Holy Cross (that is on 15th September), in the year of Grace 1293."[5]

The burgh-reeves in later times pass into the familiar bailies,[6] who still preside over our municipal affairs,

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the Christmas mote watch and ward were set throughout the wards, and at the third mote, which was held in June, on St. John's day, precautions against fire were taken. These motes were held in a vacant space at the east end of St. Paul's church-yard, near the Cross there. *Ib.* p. 726; and *Liber Albus*, p. 118.

[1] *Leges Burgorum*, c. 70.

[2] Hamilton, *Descriptions of Lanark and Renfrew*, p. 282, *anno* 1424.

[3] See form of oath of the town serjeant, of the serjeant of the mayor or serjeant-at-mace (*serviens ad clavam*) of Preston (Taylor, *Description of Preston*, pp. 36-44, Preston 1818, 8vo); of Bristol (Bickley, *Little Red Book of Bristol*, i. p. 49).

Cliens is used as an equivalent of *serviens* or serjeant. *Liber Collegii N.D.* 258, 259, and elsewhere.

[4] "Mute in the lawes of this realme is called *placitum*." Skene, *De verborum significatione*, s.v. "Mote."

[5] *Registrum Episcopatus Glasguensis*, i. p. 210. There is a similar record of the year 1295 in *Registrum de Neubotle*, p. 144.

[6] *Ballivus* or *bedellus*, bailiff or baillie, occurs in the *Leges Burgorum*, but in the sense of agent or deputy, and as representing the king,

while the term *prepositus* is limited to the Alderman[1] or Mayor, the Provost of our days.[2] Thus, in 1469, we have "the provost, bailies, and communitie of Glasgow."[3] No such officer, however, appears in the original

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not the burghal community. When the burghs began to get leases of the Crown dues it was no longer necessary for the king to have an agent to collect these; the name, however, remained and was transferred to the representative of the community by whom he was chosen. Cf. c. 2 (*regi et ballivis suis*), c. 55 (*ballivi castri*). *Fragmenta Collecta*, c. 28. In c. 59 of the *Leges Burgorum*, *ballivus* is, however, found along with *prepositus*. See also *Quoniam Attachiamenta*, c. 40.

In early times the sheriffs of London and Middlesex were called bailiffs, and not improbably under this name the Mayor was included. Riley, *Gildhallae Liber Custumarum*, p. 698.

Bedellus is sometimes used as synonymous with *ballivus*, *Leges Burgorum*, cc. 59, 76, 110; elsewhere it is used of an officer or bedel. *Fragmenta Collecta*, c. 30; *Iter Camerarii*, c. 3, 5.

[1] "Alderman" is used in the older records in the sense in which we employ "provost." In the Burgh Laws (cc. 36, 100, 105) we have *prepositus* = alderman. In the early records of Edinburgh and Aberdeen the term "alderman" is generally used and was gradually superseded by "provost." "The alderman, bailzeis, consale and communitie of the burgh of Aberdeen," 1492, *Acta Dominorum Concilii*, pp. 247, 250; "The alderman and balzeis of Aberdeen, 1483, 1494, *ib.* pp. 81, 331; "The alderman and balzeis of Dundee," 1479, *ib.* p. 43. The "alderman of Elgin, 1540, otherwise provost," *Records of Elgin*, i. pp. 48, 51, 64. In the statute book we have "Alderman and bailies," 1425, cc. 17, 23; "Aldermen and council," 1426, c. 3; "Provost, aldermen and bailies," 1469, c. 5; 1503, c. 41; 1540, c. 16. Mackenzie, *Observations on the Acts of Parliament*, p. 68.

[2] "Provost" was formerly in universal use in England as the name of the head of a municipal corporation. Toulmin Smith, *Early Gilds*, p. xxii (Early English Text Society). Alderman was the title given to the head or warden of a gild of merchants or craftsmen. *Ib.* xxxviii, 31, 55, 73, 188.

[3] *Registrum Episcopatus Glasguensis*, i. p. 210.

burgh constitution, the affairs of the community being managed by the burgh reeves with the assistance of the serjeants,[1] or sheriffs as they are occasionally

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[1] Proceedings took place in a mute of the burgh of Glasgow, in presence of the *prepositi*, the burgh reeves, in the plural, not *prepositus*, the provost, in the singular, 1292. *Registrum Episcopatus Glasguensis*, i. p. 198, 200, 210. Similar proceedings are recorded in 1295, *Registrum de Neubotle*, p. 144. In 1327 the burgh reeves (again *prepositi*, in the plural) of the various burghs render their accounts in exchequer at Dumbarton. (*Exchequer Rolls*, i. p. 59.) The *Statuta Gildæ*—collected for the regulation of the Guild of Berwick, but bearing to be the statutes of the Guild of Scotland—contemplated (c. 38) the election by the community of a mayor as well as of burgh reeves, four in number, known as Ferthingmen, because, it is suggested, each represented one of four wards or quarters of the burgh. (*Ib.* cc. 17, 47.) When Robert, Bishop of St. Andrews, *circa* 1150, established the burgh of St. Andrews, by license of David I., he appointed Mainard, the Fleming, its *prefectus*. He was the King's own burgess of Berwick, so that the office may have been established after the usage of that town. Lanark seems at one time to have had a *prefectus*, and in Glasgow the term is occasionally used to denote the provost. Renwick, *Protocols*, No. 2477. In 1399 the community of the burgh of Aberdeen elected an alderman (the magistrate now known as provost), four bailies, and four serjeants. Certain passages in the Burgh Laws (cc. 52, 76, 105) might indicate that there was a single and supreme *prepositus*, but this is not their meaning. Cf. *Registrum Episcopatus Glasguensis* (i. p. 210, *circa* 1124-53), where certain procedure takes place before the whole *prepositi* of the burgh, but one of them only was present at the giving of sasine. This explains the language of the burgh laws.

King David I.'s charter to the burgh of Rutherglen mentions only one *prepositus* and one serjeant; but in 1327 the *prepositi* of the burgh appear in Exchequer (*Exchequer Rolls*, i. p. 70). So too in Lanark we meet with "the burrow greff" (*Fragmenta Collecta*, c. 17); but we have *prepositi* in Exchequer (*Exchequer Rolls*, i. p. 70). In the records of the burgh of Edinburgh the expression "principal provost" occurs, 21st and 28th December, 1514, and in 1518 "the provost president called.[1] While *prepositus* was the ordinary term in use, *ballivus* was occasionally used in Glasgow from an early time.[2]

The three head courts were assemblies of the burgesses for the election of officers and for conferring and making statutes or rules (*statuta*) regarding the property of the community. Within the burgh, however, there was an ordinary court (*curia burgi*) for dealing with criminal matters and for disposing of civil questions between burgesses, which was presided over by the *prepositi*. "Courts of lawe sal be held and lawe-brakers punished ance in fyftene dais thro the haill yeir, at all seasons of the year."[3] "Somondis aw to be maid in the burgh be the bedal (*per bedellum*), and he aw to somonde sic a man, sic a day, at his house, before sic witnes A. B. and C. seand and herand, that he comper befor sic alderman (*prepositus*) and balyeis (*ballivi*) of B., sic a day, yer and sted, till ansuer till sic a man, apon sic a thing, or sic a cause, or to sic a bref (*vel tali breui*). And gif he comperis nocht thar, the bedal sal [nocht] suer, bot the witnes sal suer of the recorde (*jurabunt*

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and baillies." In 1514, in Glasgow, we meet with a provost-depute, "Johannes Schaw, *prepositus deputatus dicti burgi*." Marwick, *Charters of Glasgow*, ii. p. 485; George Colquhoun, "*prepositus deputatus dicti civitatis*." *Ib.* p. 489; *Liber Collegii N.D.* p. 218. In Elgin in the absence of the provost they had a "president of the burgh," 1550-1, *Records of Elgin*, p. 107.

[1] A Court of Session summons is still addressed to "Messengers-at-arms our Sheriffs in that part."

[2] In 1290 John Dubber or Dunber and John son of Waldeve are styled *civitatis Glasguensis prepositi* (*Registrum Episcopatus Glasguensis*, i. p. 200); in 1300 they are called *ballivi de Glasgu* (i. p. 216): and also in 1283, *Registrum de Passelet*, p. 384.

[3] *Fragmenta Collecta*, c. 33.

de recordo) to be maid in playn court (*in plena curia*) of the somoundis lauchfully maide."[1] The burgh court had exclusive jurisdiction within the burgh in all matters civil and criminal, except the four pleas of the Crown. Neither the king nor any subject superior could bring a burgess before his court. If he was summoned to the king's court it was his duty to attend there and to except to the jurisdiction, saying "that in his awne court of the burgh befor his aldirman (*prepositus*) or his bailye he sall do full rycht."[2] If anyone challenged a decision of the burgh court, or falsed the doom, as it was technically termed, he must do so on the spot (*stante pede*), and in this fashion: "This dome is fals, stynkand and rottin in the self, and tharto I streik a borch [*i.e.* give security] and that I will preiff."[3] The appeal was heard by four burgesses of Berwick, Roxburgh, Edinburgh and Stirling, before the chamberlain;[4] but this practice ultimately fell into desuetude.

One of the leading characteristics of the burgh was that it was self-governing. It held its own courts, and no one from outside interfered with them. The burgesses even claimed right to deal with questions falling under what was called the spiritual jurisdiction of the church.[1] The barony of Glasgow was subject to the jurisdiction of the bailie of barony—in later times, the bailie of regality—but he never interfered with the courts of the burgh of Glasgow;[2] and a burgess was not allowed to sue another either in the regality court or in any other.[3] The king or, in some cases the bailie of regality, might direct a brieve to the bailies of the burgh for trying a certain question, but in that case the trial was a proceeding of the burgh court itself. In criminal matters, the burgh court had extensive jurisdiction, including the right to try a murderer taken redhanded, and to inflict capital punishment; the four points of the Crown were, however, reserved for trial by the King's Justiciar, and, as time wore on, a certain amount of civil jurisdiction passed from the burgh courts to those of the king;[1] but when the burgh was a burgh of regality, as in the case of Glasgow, it had the right of repledging criminals from the courts of the king.

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[1] *Fragmenta Collecta*, c. 30. *Plena curia*, playn court, means full, that is open or public court. See Barrington, *Observations on the Statutes*, p. 127; Pollock and Maitland, *History of English Law*, i. p. 525.

[2] *Leges Burgorum*, c. 56; cf. *ib.* cc. 6, 7; *Iter Camerarii*, c. 28; *Fragmenta Collecta*, c. 34. See *Extracts from the Council Register of Aberdeen*, 1398-1570, 11 October, 1411, p. 387.

[3] *Fragmenta Collecta*, c. 52. Act, 1429, c. 116.

[4] *Fragmenta Collecta*, c. 52. Act, 1503, c. 46, c. 41, *Acts of the Parliaments of Scotland*, ii. 246, 254. Spens *v.* Haddington, 1478. *Acta Dominorum Concilii*, p. 24. By letters patent dated 5th November, 1454, King James II. directed that the parliament of the four burghs should be held in Edinburgh yearly. *Charters of Edinburgh*, p. 76.

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[1] In 1510 the bailies of Glasgow recorded in the Act book of the burgh court certain statutes against the jurisdiction of Holy Mother Church, to the effect that no citizen ought to summon another citizen before a spiritual judge-ordinary, respecting a matter which could competently be decided before the bailies in the court house of Glasgow. Following upon this they fined a citizen who had sued another in the court of the Official "for half ane hundredth lentren waire." Ultimately the bailies agreed not to put these statutes into execution. *Diocesan Registers of Glasgow*, ii. pp. 385, 390. In 1524 the provost, bailies and council of Edinburgh ordered that no indweller of the burgh should summon another before the court of the official in any action competent before the burgh court. *Burgh Records of Edinburgh*, 6 September, 1524.

As to a "profane" action, see Laird of Halkheid *v.* Bishop of Glasgow, 1480. *Acta Dominorum Concilii*, p. 48.

[2] In 1530 the bailie of the Bishop's Court in the city of Old Aberdeen had to obtain the authority of one of the bailies of the burgh of New Aberdeen to hang a thief who had been convicted in his court. *Extracts from the Council Register of Aberdeen*, 1 March, 1530. In 1672 the Sheriff of Forfar got a special permission from the Magistrates of Dundee to sit in the tolbooth and try a case, and gave an obligation that this would not form a precedent or prejudice the town's rights. *Charters of Dundee*, p. 217, Dundee 1880, 4to. Aberdeen, see Kennedy, *Annals of Aberdeen*, i. p. 83.

[3] Even as late as 1698 the provost, magistrates and town council after reciting, that "partly throu the ill advysed proceedings and partly throu the litigious and malitious humour of some of the neighbours and comburgesses, there have been processes intended, raised and prosecuted by them against their fellow burgesses, and

In the burghs, as we first find them, there was no such thing as tenure in its feudal and modern sense, and writing was not required in the transfer of land.[2] The

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others before the baillie of the Regality of Glasgow and other judges whose jurisdiction is either incompetent, doubtful or less proper for the saids burgesses, and which processes might have been more orderly and easily begun and ended before the ordinary courts and judges of the burgh," Enacted that none of the burgesses should thereafter prosecute any process or action "for debt, slander, wrong, riot, blood, removing, limiating or any other action or process competent to be determined by the magistrates, judges and respective courts of the city before the bailie of Regality or any other incompetent, doubtful, foreign or less proper jurisdiction." *Minute of Town Council*, 7 May, 1698.

[1] The jurisdiction of royal burghs and of burghs of regality and of barony was expressly saved in the Heritable Jurisdictions Act (20 Geo. II. c. 43, §§ 26, 27), with the exception of the right of repledging. See Dowie *v.* Douglas, 27 March, 1822, 1 *S. App.* 125.

[2] Mr. Coote suggests that prior to the development of the feudal system land-holding was on the basis of the Roman *possessio*, which implied *dominium* in some sovereign power. *The Romans of Britain*, p. 243 *sqq*.

"In tenure by burgage the property can be sold and bought like burgages were held in absolute ownership, subject to the payment of a small annual sum of money to the king or other *dominus villae.* The amount was fixed and could not be increased; the burgess owed no services or boon work to a superior, and no casualties or dues were payable by the heir upon his succession to burgage property.[1] The burgages, as has been explained, were hereditary, and could, subject to certain conditions, be sold and transferred. A seller[2] had first[3] to make offer of the land he wished to dispose of to his kindred and heirs at three head courts.[4] "Gif ony burges be constrainit with mister and necessitie, swa that it behovis him to sell his heritage, he sould offer the samin at thre heid courtis to his narrest airis; And gif

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moveables without the consent of any lord, and dues (les coustumes) are to be paid according to the usages of burghs." *L'Ancienne Coutume de Normandie*, ed. De Gruchy, p. 96, Jersey 1881, 8vo. Houard, *Anciennes lois des François*, i. p. 236.

[1] The law was generally the same in England. As put in the Domesday of Ipswich: The chief lord may not "have releef, warde, ne mariage, ne other attornment of service, but only the payment of the rente, ne of non other profyt save escheet whanne the lawe yeveth." *Black Book of the Admiralty*, ii. p. 141. In the case of a few boroughs relief was payable to the king or to the chief lord (*capitalis dominus*) upon the death of a burgess owning a burgage.

[2] Cf. Coote, *The Romans of Britain*, pp. 271, 272.

[3] This was the rule at least in the case of inherited land and when the seller was distressed by poverty. *Leges Burgorum*, cc. 42, 89, 95, 106, 107, 114; *Fragmenta Collecta*, c. 10. So ascertained by the *Assisa regis David.* The burgess could sell his conquest, that is, the land he had purchased, without any formality. *L.B.* cc. 21, 101; *Frag. Coll.* c. 23.

[4] The acquisition of a burgess' qualification—the freedom of the burgh, the purchase of a burgage—could not be effected without leave of the community. *Iter Camerarii*, c. 28.

thay will buy the samin, thay mon sustene and find him in all necessare thingis, in meit as thameselfis, and in claith of ane colour, *viz.* gray or quhyte; And gif thay will not, or may not buy the samin, nor sustene him as said is, it is leasum to him to sell the saidis landis to ony uther in the best manner he may."[1] Mister and necessitie had to be proved "be the athis of xii lele and worthi men of the burgh, that is to wyt four wonnande on the ta halfe and four on the tothir halfe and othir foure fore anent the house."[2] When this had been proved in court—*in bonam assisam proborum ville*—and the fact of the sale had been established, buyer and seller, with twelve lawful and sufficient burgesses (*duodecim legales*[3] *et sufficientes burgenses*)[4]—and one of the burgh reeves met on the land at the door of the house (*ad caput et ostium terre*);[5] the seller went in, and then passed out; and the purchaser next entered, and passed out; and as each came out he gave the burgh reeve a penny, *intol* and *ottol*, or *in toll* and *oute toll*, or otherwise inpenny and outpenny.[1] "Wha sa evir he be that sellis his lande or parte of his lande, he sall be innouth and sall pas out, and the tothir standand thar furth sall entyr it. And the tane sall

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[1] Balfour, *Practicks*, p. 162; *Leges Burgorum*, cc. 42, 43, 95, 106, 107, 114; *Fragmenta Collecta*, c. 10; *Charters and Documents relating to the Burgh of Stirling*, p. 206; *Registrum Aberdonense*, i. p. 103.

[2] *Leges Burgorum*, c. 107; cf. *Fragmenta Collecta*, c. 10.
This arrangement suggests that the town was divided into three wards, or leets, as they are termed in England; and the twelve witnesses here mentioned and the twelve called to the ceremony bear some resemblance to the leet jury of many English boroughs.

[3] Legales = leil. A *homo legalis*, or law-worthy man, was one "who stands *rectus in curia*, not outlawed, nor excommunicated, nor defamed." Blount, *Law Dictionary*, s.v., London 1717, fol.; see *Coke upon Littleton*, 155 a.

[4] In the Latin Custumal of Northampton (i. c. 1) reference is made to *legales homines de curia*, apparently a special or selected body of the burgesses. *Infra*, c. x.

[5] Sale in Aberdeen in 1317. *Miscellany of the Spalding Club*, v. p. 3 *sqq.* Mr. Patrick Chalmers of Aldbar contributed an interesting note on

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this transaction, "Remarks on the law of the Burghs concerning the delivery of lands within burgh." *Ib.* Preface, pp. 10, 49.

[1] The custom of Inpenny and Outpenny in the town of East Radham was this, that in the case of all lands held burgage the seller shall give for his going out of the holding one penny, and the like for the entry of the other. If the pennies were not paid the bailiff (*ballivus*) of the lord could distrain therefor. Cowell, *Law Dictionary*, s.v., quoting the Register of the Priory of Cokesford. Spelman, *Glossarium*, s.v., gives the same quotation. Cf. Custumal of Preston, § 5, *E.H.R.* xv. pp. 496, 502.

The custom prevailed in the city of Norwich. The outgoing owner of a messuage paid to the bailiffs a penny, called Hutpenny or Outpenny, in sign and testimony of going out of his right, and the incoming owner paid another penny, called Inpenny, in sign and testimony of entering into the messuage as his right, according to the custom of Norwich. Two cases are given, one in 1286 and the other in 1289. Hudson and Tingey, *supra*, i. pp. 229, 242. See Harland, *Mamecestre*, ii. p. 235 *n.*

In the case of a ground annual in Scotland the symbol was a penny, but this was a different thing, for in that case the penny was used as being symbolical of the subject in which infeftment was given. "The sayd balye gayf grund sessyng with a penne, of four sellyn (four shillings) anwal of Mechal Forest land liand on the South Rau." This is interesting as being in English. *Records of the Burgh of Peebles*, 9 November, 1456; 25 August, 1457. See *Munimenta Universitatis Glasguensis*, i. pp. 22, 23, 24, "*per denarium ut consuetum est in burgo.*"

The rule was the same in 1290 in Norwich. Sasine of a ground rent was given by payment of a penny. Hudson and Tingey, *supra*, i. p. 242.

In 1452 the purchaser of a ground annual in Aberdeenshire was put geyff to the aldyrman a penny for the ische and the tothir sall geyff a penny for the entre and his sesyng. Gif forsuth thai mak acoyssing or a change of land[1] amaing thaim selff ilke ane of thaim sall geyff twa pennyis."[2] A record of the transaction was then made in presence of the burgh reeves and burgesses in the mutes of the burgh assembled, and sealed with the burgh seal, as we learn from our own episcopal register, and the conventual register of Paisley.[3] This procedure, at a later date, when writing was in use, came to be known as transfer by charter and claim (*Lex per quam dicitur cum cartis et clamore fiat tradicio terrarum in burgis*).[4]

This ceremony is substantially the same as that which was in use in France in the seventh century, as

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in possession by being led into the principal house on the property, all other persons being excluded and the door closed, and by delivery to him first of earth and stone and then of a penny, as the symbol of possession of the ground annual. *Registrum Episcopatus Aberdonensis*, i. pp. 273, 274, 278. Cf. *Diocesan Registers of Glasgow*, ii. p. 9.

The giving of a penny is probably a tradition of *mancipatio*. The five witnesses and the *libripens*, being assembled, the purchaser taking hold of the thing, said : "I affirm that this [house] is mine *ex jure Quritium* and is purchased by me with this piece of money (*aes*), and he handed it to the seller as a symbol of the price (*quasi pretii loco*)." Gaius, i. 119. Forms of deeds will be found in Bruns, *Fontes*, pp. 134, 135, ed. 1871.

[1] "Excambium and cosyng," *Liber Collegii N.D.* p. 138. Renwick, *Protocols*, No. 616.

[2] *Leges Burgorum*, c. 52 ; *Fragmenta Collecta*, cc. 10 and 55 ; Craig, *De Feudis*, Dieg. 2, 7, §1 ; 3, 7, §26 ; *Office of a Notary*, p. 56 ; *Registrum Episcopatus Glasguensis*, i. 197, 198, 210 ; cf. *supra*, p. 39, note 1.

[3] *Registrum Episcopatus Glasguensis*, *ut supra*. *Registrum de Passelet*, p. 385. This procedure was in use in Glasgow 1470-77.

[4] *Miscellany of the Spalding Club*, v. p. 6.

described in the Appendix to the *Formulae* of Marculfus. In completing the sale of a house the seller walked out and left the premises unoccupied, delivering the door and hinges to the buyer, who entered and took possession.[1]

Sasine given in the burgh before the neighbours of the burgh will, it is said, be sufficient, although it is outwith the court and not forspoken therein,[1] which shows that this was an innovation upon an older rule which required transfer to be made and possession given in open court.[2] A remnant of this old form still subsists, or at least subsisted until the other day, in sasine to an heir cognosced by hasp and staple *per fixularum et tenelarum traditionem*,[3] the equivalent of the *ostium et anaticula*[4] of an earlier period.

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[1] Marculfus, *Formulae*, Appendix, Nos. 19-20; Rozière, *Recueil général des Formules*, i. Nos. 256, 256 *bis*, 287, 288, 289, Paris 1859, 8vo.; *Formulae Lindenbrogii*, i. No. 156; Walter, *Corpus Juris Germanici antiqui*, iii. p. 451; *Cartae Senonicae*, Nos. 8, 34, Appendix No. 5 in Zeumer, *Formulae Merowingici et Karolini aevi*, pp. 188, 200, 210; *Formulae extravagantes*, i. No. 23; *Ib.* p. 547 (Monumenta Germaniae Historica).

This is the sasine *per ostium* of the English law: "Where the tenement is a principal manor or mansion, it is enough for the grantor (le donor) in the presence of some free neighbours as witnesses, and of some of the tenants, to deliver seisin to the purchaser by the hasp or ring of the door, or by shutting the gate. . . . If seisin is to be made of a tenement where there is no house, then sufficient livery is made by a rod or by a glove in the presence of good witnesses." *Britton*, by Nichols, ii. c. ix. § 6. In the latter case, according to Bracton, "per fustem et per baculum."

The point specially insisted on by Bracton and Britton is that the premises should be wholly vacated by the seller. If anything of his remained in them this invalidated the seisin. See Bracton, *De legibus Angliae*, vol. i. p. 314; vol. vi. p. 138; ed. Twiss. This was the Roman law which required that the purchaser should have *vacua possessio*, and it was the practice for the purchaser to obtain and preserve an "Instrumentum testationis vacuae possessionis," the equivalent of our Instrument of Sasine. See Brissonius, *De Formulis Populi Romani*, Lib. vi. p. 509, ed. Moguntiae, 1649, 4to. Colquhoun, *Roman Civil Law*, §§ 298, 299.

Vacua possessio was a necessity where the title rested on *occupatio*.

Some account of the history of the symbolical delivery of land will be found in Pollock and Maitland, *History of English Law*, ii. p. 82 *sqq*.

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[1] *Leges Burgorum*, c. 111; *Fragmenta Collecta*, c. 55. As to the neighbours (*vicini burgi*), see *Leges Burgorum*, c. 10. *Supra*, p. 21.

[2] See, for instance, a transfer by *intol* and *uttol*, in 1293, which was made in presence of the burgh reeves (*prepositi*) and citizens assembled in the mutes of the burgh (*in placitis burgi*). Sasine was given by *intol* and *uttol* upon the land, according to custom, on Tuesday the 13th of September (the morrow of the festival of the Exaltation of the Cross). A previous sasine had been given a fortnight earlier (on the Tuesday next to the festival of the decollation of St. John the Baptist), that is, on 1st September (the festival being on 29th August). *Registrum Episcopatus Glasguensis*, i. 210; Hamilton, *Descriptions of Lanark and Renfrew*, p. 186.

[3] *The Office of a Notary Publick*, p. 92, Edinburgh 1740, 8vo. "Whereupon the Bailie, albeit he know the Truth of what is so said, enquires at the Witnesses, or other Persons in their Company, If he who sought Seisin was the apparent Heir to the Person last infeft, or habit and repute such. And upon their answering affirmatively, he causes the apparent Heir take hold of the Hasp and Staple of the Door, and make him enter the House, and bolt the Door upon himself; and coming out, he takes Instruments in the hands of the Clerk of the Burgh, for certifying what was done." *Hope's Minor Practicks . . . with Notes . . .* by the late John Spotiswood, p. 323, Edinburgh 1734, 8vo.

Sasine "per le hesp et stapyll" in Glasgow 1487. *Registrum Episcopatus Glasguensis*, ii. p. 457: and later *Liber Collegii N.D.* pp. 99, 108, 140, 190, 225.

In 1627 an attempt was made to abolish cognition and sasine by hasp and staple. See *Records of the Convention of Royal Burghs*, iii. pp. 240, 317.

[4] "Fieri debit traditio per ostium et per *haspam* vel annulum." Bracton, *De legibus Angliae*, vol. i. p. 314, ed. Twiss. Cf. Sasina facta

According to the common law of Scotland, a widow is entitled to the liferent of one-third of the heritage in which her husband died infeft in fee, but this rule does not extend to property, whether land or houses, held by burgage tenure.[1] On the other hand, the widow of a burgess was entitled, so long as she remained a widow, to the liferent of "the inner halfe of the house that is callyt the flett; And the ayre sall hafe the tothir halfe of the hevyd house (*domus capitalis*) gif hym lykis to wyn thar in."[2] Various ingenious attempts have been made to explain this exception to the general law, but the fact seems clear that it existed from the earliest times, and goes to show that the consuetudinary law of burghs had been well settled before the general law of the land, and long

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"per fustim vel per baculum vel per *haspam*." *Ib.* vi. p. 139. See also *Fleta*, iii. 15, § 5, p. 201, London 1685, 4to.

It is a question whether sasine *per ostium* is not related to diligence *per ostium*. *Infra*, pp. 141, 153.

Bracton's *annulum* may be the equivalent of the Scottish *staple*; but it is a question whether *vel* should not be *et*, and whether *annulum* is not an error of transcription for *anatalia* or *anaticula*. Fleta, no doubt, repeats the expression, and Britton (ii. c. ix. § 6) uses "*le anel*," but both had probably before them a MS. of Bracton with this reading. The *Anaticula* or *anatalia* of the formulists evidently gave great trouble to the copyists. See Zeumer, *Formulae Merowingici et Karolini aevi*, p. 188 *n.*

[1] Fraser, *Personal and Domestic Relations*, i. p. 618, Edinburgh 1846, who refers to the pleading of Sir Islay Campbell in Park v. Gib, *M.* 15,855, in which he attempts to explain the exception. The rule was altered in 1861 by 24 and 25 Vict. c. 86, § 12.

[2] *Leges Burgorum*, c. 24. Craig states (*De Feudis*, ii. Dieg. 22 § 34) that this rule was obsolete in his time, but he explains that the flett was the inner part of the house containing the fire-place, which was generally placed in the middle part of the house.

before tenure, in its technical sense, was established; that burgh customs had obtained the force of law before the era of chartered burghs.

The principal purpose of a royal charter nowadays is to create a corporation, and to define its constitution and powers. This, however, was not the object of the early charters in favour of burghs.[1] The existence of the burgh was assumed, the community already existed, and the charter, as we have seen, was a grant of privileges.[2]

The early burgh was not a trading community, but in the reign of King David trade was beginning to develop, and the first special franchises, conferred on burghs by charter, had reference to buying and selling, to fairs and markets, and market tolls.

David I. granted to his burgh of Rutherglen and the burgesses of that same town, a right to levy toll within certain limits, and prohibited anyone selling aught within these bounds, known as the freedom of the burgh, unless first brought to the burgh of Rutherglen.[3] King William granted charters to Perth and to Aberdeen[1] of the same character, except that the terms are somewhat more detailed. He also (*circa* 1190) authorized a weekly market at Glasgow on Thursday; and an annual fair, with his firm and full peace, for eight days from the octaves of the apostles Peter and Paul, that is, from 7th July,[2] which soon became an event of some importance in the neighbourhood, and advantage was taken of the protection it enjoyed for making and receiving annual payments.[3]

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[1] This is seen by an examination of the charters themselves. It is also proved in many ways in Merewether and Stephens, *History of Boroughs.*

[2] Reference is frequently made to *constitucio villae,* but this means an ordinance or bye-law of a burgh.

Merewether and Stephens draw a distinction between a charter to "burgesses" simply, and to burgesses and their heirs. *History of Boroughs,* i. p. 363; but it may be questioned whether it imported a substantial difference.

[3] This charter is not extant, but it is mentioned in a charter of William the Lion, which, in turn, is set out in full in a charter of confirmation by Robert I., preserved in the archives of the burgh. *Acts of the Parliaments of Scotland,* i. p. 86; Hamilton, *Descriptions of Lanark and Renfrew,* p. 224; Ure, *History of Rutherglen,* p. 5. *Report*

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on Municipal Corporations (*Scotland*), Appendix, p. 9, 1836 fol. The boundaries within which the burgesses were entitled to levy tolls extended from Neithan to Polmadie, and from Garin to Kelvin, and from Lowdun to Prenteineth and from Karnebuth to Karun. The charter by William the Lion in favour of the burgh of Ayr directed that at Mach and Karnebuth and Lowdun and Croseneton and Lachtalpin, toll and other customs which are payable to the burgh be given and received. It would thus appear that both Rutherglen and Ayr had a toll station at Karnebuth, supposed to be on the boundary between Ayrshire and Renfrewshire.

[1] *Acts of the Parliaments of Scotland*, i. p. 86.

[2] *Registrum Episcopatus Glasguensis*, i. pp. 36, 38. The grants were confirmed by Alexander II. in 1225. *Ib.* pp. 112, 113.

[3] Shortly after the institution of the fair, Robert of London, one of the illegitimate children of King William the Lion, granted to the church of Glasgow a stone of wax from his rents of Cadihou, *i.e.* Hamilton, to be delivered yearly "ad nundinas de Glasgw." *Registrum Episcopatus Glasguensis*, i. p. 41. In 1235 Maldoven, Earl of Lennox, became bound to pay to Gilbert, son of Samuel, 20 marks, "in nundinis de Glasgw proximis." *Registrum de Passelet*, p. 171; cf. *ib.* p. 185 (numbered by mistake 189). In 1238 the feu-duty of certain lands in the Lennox was made payable "*infra nundinas de Glasgw.*" *Cartularium Comitatus de Levinax*, p. 30; Pref. p. xi. See also *ib.* pp. 80, 84, 85, 86. For the lands of Kilmun a pair of Paris gloves were annually rendered to the superior at the fair of Glasgow. *Origines Parochiales Scocie*, ii. p. 72.

"The king's peace"—the special protection granted by the king and fortified by severe sanctions—exercised a powerful influence in the Middle Ages. The manbote or payment to the king for breach of his peace, or for crime committed in his girth or precinct was 180 cows. "Gif anie man is slane within the king's peace, or others, the slayer sall pay to the king therefore, nine times twenty kye."[1] This was the highest scale of compensation. In addition the wrong-doer was bound to make satisfaction to the relatives of the slain man.[2] So, too, in England, in Anglo-Saxon times, the king's *burh-bryce*,—the fine for breaking his burh,—was exceptionally high. His burh was protected, his peace must not be violated. Acts which would be illegal anywhere become more illegal when they are done within the burh, but acts which would be illegal elsewhere are legal there. Hence a grant of the king's peace was equivalent to a grant of a special privilege, and conferred exceptional advantages.[3]

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[1] *Regiam Majestatem*, iv. c. 56; Skene's translation, iv. 37. See *Assise regis David*, c. 14, *Acts of the Parliaments of Scotland*, i. p. 320. The figure here given is xxix *vaccae*, xxix *Ky*., but this is no doubt an error in transcription, and should be ix^{xx}, that is, nine score or 180. See Robertson, *Scotland under her Early Kings*, i. p. 258.

See also "Leges inter Brettos et Scotos," *Acts of the Parliaments of Scotland*, i. p. 664. "Giff ony man be slayn in the pes of our lord the king til him pertenis ix tymes xx^{ti} ky."

[2] *Assise regis David, supra*. See Seebohm, *Tribal Custom in Anglo-Saxon Law*, p. 298 *sqq*., London 1902.

[3] By the end of the thirteenth century, the king's peace had, in England, grown from an occasional privilege into a common right. Pollock, *Oxford Lectures*, p. 88, London 1890, 8vo. In Scotland it was made general by the Act, 1449, c. 2. See 1424, c. 2; 1425, c. 7.

As to the special peace enjoyed by towns in the Middle Ages, see Pirenne, *Revue Historique*, lvii. (1895) p. 293 *sqq*.

In granting the burgh of Glasgow to the bishop (*circa* 1175-78), King William adds, "Therefor I will and straitly enjoin that all burgesses, who shall be resident in the said burgh, shall of right have my firm peace throughout all my land in going and returning: And I strictly prohibit any one from unjustly disturbing or molesting them or their chattels, or subjecting them to any injury or affront, under pain of the highest penalty (*super meam plenariam forisfacturam*)."[1]

In the charters to Perth, Aberdeen, Inverness and Stirling[2] by William the Lion and Alexander II., it is forbidden to anyone to have a tavern (*taberna*) in any town (*villa campestris*) within the counties of Perth, Aberdeen, Inverness[3] and Stirling respectively, unless when a knight[4] is lord, or in the old phraseology, heritor (*dominus*) of the town,[1] and resident in it; and in that case they are to have but one. In the earlier charter of Rutherglen reference is likewise made to the lord (*dominus villae*) of a non-chartered town.

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[1] *Registrum Episcopatus Glasguensis*, i. p. 36; Skene, *De verborum significatione*, s.v. Forisfactum. Forisfactura = forfeiture, escheat.

As to the king's peace, see *Assise regis David*, c. 29; *Leges Burgorum*, c. 77; *Liber de Calchou*, p. xxiii.; Schröder, *Lehrbuch der deutschen Rechtsgeschichte*, pp. 117, 121, 641; Huvelin, *Marchés et Foires*, p. 350.

[2] *Acts of the Parliaments of Scotland*, i. pp. 86, 87, 89; Kennedy, *Annals of Aberdeen*, i. p. 11; *Stirling Charters*, p. 6; Cowan, *The Ancient Capital of Scotland*, i. p. 216.

The provision as to taverns does not appear in the Burgh Laws, but in the Memorandum of burgh customs recorded in the Glasgow Register it is stated that no bailie of the king or his serjeant shall keep a tavern in a burgh, or sell or make bread for sale. *Registrum Episcopatus Glasguensis*, ii. p. 609.

[3] In the charter to Inverness it is "in aliqua villa campestri extra burgum meum . . ." *Acts of the Parliaments of Scotland*, i. p. 89. This is the third charter. *Ib.* p. 53.

[4] "Erlis, barounis, knychtis, vavasouris and fre tenandis be charter ande ferme of the terme of thar lyf, . . . salbe quyt of gevin of toll or custom within the burrowys." *Fragmenta Collecta*, c. 26.

It was the attempt to exercise the franchise, conferred by royal charter on the burgesses of Rutherglen, outside the demesne land of the king and within the lands of the bishop of Glasgow, which led to the well-known conflicts between the two burghs, and ended in a charter of Alexander II. restraining the burgesses of Rutherglen from interfering with Glasgow.[2] On the other hand,

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[1] The term occurs in the *Regiam Majestatem*, iv. c. 54, and is translated by Sir John Skene (iv. c. 31) "the Lord of the Village." The German equivalent is *Stadtherr*, but his rights were much more extensive than those of a *dominus villae* in Scotland.

[2] Ure, *History of Rutherglen*, p. 32; *Registrum Episcopatus Glasguensis*, i. p. 114. King David had granted a charter to the royal burgh of Rutherglen authorizing the burgh reeve to exact certain tolls and customs within very wide limits (*supra*, p. 45), and provided that the lord or heritor (*dominus*) of any town (*villa*) within these limits should give the serjeant assistance in collecting these within the town. Ure, *supra*, p. 5; cf. pp. 7, 8, 11. The burgh-reeve evidently attempted to exercise this authority within Glasgow; but Glasgow was not within the *terra regis*, and was not therefore bound by the royal grant. By charter of 1236 Alexander II. disallowed the claim of Rutherglen, and fixed the limit of its jurisdiction at the *Crux de Schedinestun*, the Cross of Shettleston—which it has been suggested was Tollcross, originally Towcorse—in accordance with former practice (*sicut illa antiquitus capi solebant*). *Registrum*, i. p. 114; Hamilton, *Descriptions of Lanark and Renfrew*, pp. 223, 224. The villa de Schedinestun was upon the *terra regis*, and was granted to Glasgow by Alexander II. in 1241. *Registrum*, i. p. 147.

The privileges of Glasgow were confirmed by King James II. in 1449, in a Letter addressed to the bailies, burgesses and communities of

Glasgow claimed and obtained payment of toll from the burgesses of Rutherglen on all goods sold or bought in Glasgow.[1]

Renfrew and Rutherglen. *Registrum*, ii. p. 369; Hamilton, *Descriptions*, p. 171; and by James VI. in $158\frac{9}{1}$, Marwick, *Glasgow Charters*, i. pt. 2, p. 189.

There was a like dispute between the royal burghs of Ayr and Irvine (*Charters of the Royal Burgh of Ayr*, p. 28); and between the burghs of Renfrew and Paisley, *infra*, pp. 145, 173.

There are many examples of grants to English boroughs of the right to levy tolls within very wide limits. See case of Northampton. Adkins, Markham and Cox, *Records of Northampton*, i. p. xxx.

[1] In 1304 this right was claimed to have existed from time immemorial. *Calendar of Documents relating to Scotland*, ii. No. 1627.

The validity of the claim was established in court in 1575. Marwick, *Glasgow Charters*, i. pt. 2, p. 164.

In 1734 a question, involving a somewhat similar point, arose in the case of Adam and others *v.* Weavers Incorporation of Glasgow (Elchies, *Pactum Illicitum*, No. 2; Craigie, *Session Papers*, vols. viii. and x.). The Act 1592, c. 76, forbad the exercise of crafts within the suburbs of free burghs, and empowered the magistrates to seize and escheat all work wrought there. The village of Blackfaulds or Calton (*infra*, p. 81) lay a short distance beyond the East port of Glasgow, and the weavers of Glasgow maintained that under the powers of this Act the magistrates of Glasgow could debar the weavers of Calton from carrying on their trade. The latter replied that whatever might be the meaning of the Act the term "suburbs" could not apply to Calton, which was situated upon the lands of a barony entirely independent of Glasgow, and not subject to its jurisdiction in any way. To interpret the Act, in the manner contended for by Glasgow, would, it was said, be to subject the owner of the barony of Barrowfield to an unreasonable restriction in the use of his property, by disabling him from feuing a house to a craftsman.

CHAPTER II

THE BURGH OF GLASGOW

TURNING from the general scheme of organization of the burghs, let us examine more minutely the life of the burgh community, and, for illustration, take our own burgh, the burgh of Glasgow. It is difficult to conceive of Glasgow otherwise than as a great trading and manufacturing community, canopied with smoke, shut off from every rural sight and sound, with long lines of tall houses, weary miles of stone-paved streets thronged with thousands of eager, busy toilers. Yet this is but the growth of little more than a century, and the further we recede from the present time the greater is the contrast.

Like other towns, both in Scotland and England, the population of mediaeval Glasgow was small.[1] When the University was founded, in 1450, it is estimated that it was about 1500.[1] At the Reformation it did not exceed 4500 souls;[2] which, translated into the language of to-day, means that it was a small place like Linlithgow or Haddington, Forres or Nairn, and more of a country town than any of these. It was then, in point of assessable value, but the eleventh town in Scotland,[3] it had few industries, and little or no trade; and, apart from its cathedral establishment and its university, it was largely an agricultural community, like most towns in the middle

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[1] In 1784 Mr. John Topham, the well-known antiquary, published (*Archaeologia*, vii. p. 337) the Subsidy Roll of 51 Edward III., and George Chalmers, working upon this, estimated that the whole population of England and Wales in 1377 did not much exceed 2,350,000 persons (*Estimate of the Comparative Strength of Great-Britain*, p. 14, London 1802, 8vo); and that at the accession of the Stuarts, in the person of Robert II., in 1371, the Scottish nation could only have amounted to 470,600 souls (*Caledonia*, v. p. 4, Paisley 1889, 4to).

London had then less than 35,000 inhabitants; Lincoln had 5100; Canterbury less than 4000; Winchester little more than 2000. The population of the Scottish towns must have been still less, and it is estimated that in 1450 the population of Glasgow was not more than 1500. Thomas Amyot (*Archaeologia*, xx. p. 524) thinks that Chalmers has not allowed sufficiently for the depopulation of England at the period in question, caused by the great pestilence of 1349, and is inclined to double his figures. Professor Thorold Rogers, on the other hand, accepts the Subsidy Roll as a basis of calculation, and pretty nearly Chalmers' estimate (*Six Centuries of Work and Wages*, p. 118, 8th edition, 1906, 8vo).

[1] Glasgow was then described as a notable place, and well suited for being the seat of a university on account of its mild climate, the plentifulness of provisions and of other things required for the use of man. Bull of Pope Nicholas V. *Munimenta Universitatis Glasguensis*, i. p. 4.

[2] The population of Edinburgh at the same period did not exceed 9000; Chambers, *Annals of Scotland*, i. p. 158; that of Aberdeen was about 3000. Kennedy, *Annals*, i. p. 103.

In 1594 Glasgow had "becum rwinous and almaist decayed, be ressone of the removing of the clergie, sen the reformation of religioun that sustenit and vpheld the samyn of befoir." Recital in an Act in favour of the Citie of Glasgow, 1594, c. 56. *Acts of the Parliaments of Scotland*, iv. p. 79; cf. Act 1587, c. 113; *ib.* iii. p. 505.

[3] Gibson, *History of Glasgow*, p. 78.

ages.[1] Still it was an ancient burgh, with the added dignity of a city.[2] In early days it had a mint and a moneyer, one of the distinguishing features of a burgh, and although both disappear in later times their existence indicates that the town was fully equipped as a burgh.[3]

One hundred and seventy years ago Glasgow had but ten streets, and was "surrounded with corn-fields, kitchen and flower gardens and beautiful orchyards, abounding with fruits of all sorts, which, by reason of the open and large streets, send forth a pleasant and odoriferous smell."[1]

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[1] "The activity of the townsfolk was not confined to their special craft or trade. In harvest time they poured out of the towns into the country. . . . The long vacation in the courts and the universities was extended from July to October, in order that such persons as followed the pursuits of law and letters might have ample leisure for the all-important work of the harvest." Thorold Rogers, *supra*, p. 122.

Cunningham, *Growth of English Industry*, i. p. 91, Cambridge 1890.

As late as 1612 the burgh of Peebles "ordanis all these that passit furth of the toun the last yeir to scheir, furth of the samin, be presentlie poyndit and dischargit that nane of thame pas away this harvest wnder the pane of banishment of the toun, and modifeis thame for thair fea, viz., the best men scheiraris xxx^d, the wemen scheiraris ij^s." *Burgh Minute of Peebles*, 11 August, 1612.

[2] In a charter of Robert II. (*circa* 1380) reference is made to the *burghs* of Stirling and Dumbarton and the *city* of Glasgow. *R.M.S.* p. 172, No. 10.

A 'city' (*civitas*) is a place which has a bishop. Bartolus, *Opera*, vi. p. 275, Lugduni 1555, fol., 1. urbis appellatio No. 7. Dig. de Verborum significatione. "A city is a borough incorporate; which hath or hath had a bishop, and though the bishopricke be dissolved yet the city remaineth." *Coke upon Littleton*, 109 b; but Mr. Hargrave points out *ib.* that Lord Coke goes too far in saying that a borough must be incorporate to be a city, as a borough which is not corporate may also be a city. Béchard, *Droit municipal au Moyen Age*, i. pp. 75, 89.

[3] M'Ure, *View of the City of Glasgow*, p. 83, ed. Macvean; Denholm, *History of Glasgow*, p. 62, Glasgow 1798; Wingate, *Illustrations of the Coinage of Scotland*, Plate vi. pp. 23, 25, 27, 40, 145, Glasgow 1868, 4to; Burns, *The Coinage of Scotland*, i. pp. 127, 143 *sqq.*, Edinburgh 1887, 4to.

Thine Orchards full of fragrant Fruits and Buds
Come nothing short of the Corcyran Woods,
And blushing Roses grow into thy fields
In no less plenty than sweet Paestum yields.[2]

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[1] M'Ure, *A View of the City of Glasgow*, p. 122, ed. Macvean. Writing about two centuries earlier, Bishop Leslie says, "It is a verie fair situationne and pleasand, abundant in gairdine herbis, aple tries and orchardis." *Historie of Scotland*, translated by Father James Dalrymple, i. p. 17. (Scottish Text Society). "Yet would I celebrate thy praise, O Glasgow! because of those pleasant and fragrant flowers that so sweetly refresh'd me, and, to my admiration, sweetened our present enterments." Franck, *Northern Memoirs* (1658), p. 108, Edinburgh 1821, 8vo.

[2] This is Mr. John Barclay's rendering of Dr. Arthur Johnston's

Aemula Phæacum tua sunt pomaria sylvis,
Ruraque Pæstanis sunt tibi plena rosis.

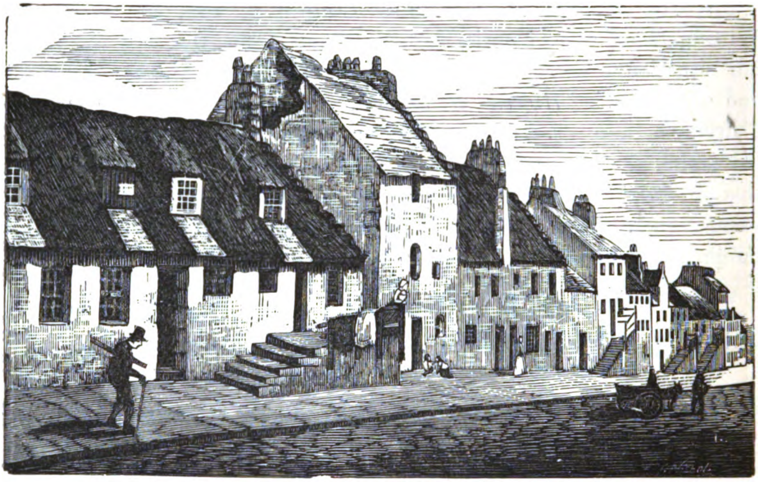
Memorialls for the Government of the Royall Burghs in Scotland, by Philopoliteios [*i.e.* Alexander Skene of Newtyle, a bailie of Aberdeen], p. 270, Aberdeen 1685, 12mo. Arturi Ionstoni, *Poemata omnia*, p. 433, Middelb. 1642, 12mo; *Musa Latina Aberdonensis*, ii. p. 261.

Rev. John Barclay was M.A. of King's College, Aberdeen. In 1674 he was ordained minister of the parish of Monquhitter, and in 1678 was translated to Cruden, where he died in 1691. He was the author of several volumes of verse.

Glasgow was famed for its apples (Bernard, *Geographical Dictionary*, s.v. Glasgow, London 1693, fol.) and for its small fruit down till the end of the eighteenth century. Advertisement of gardens behind the cathedral, *Glasgow Advertiser*, 6 December, 1790. The Town of Glasgow's great orchard was in the Gorbals, between the Clyde on the north and the Leper Hospital on the west. St. Ninian Street was formed through it. In 1684 the barony of Gorbals was finely wooded. Fountainhall, *Historical Notices*, p. 696 (Bannatyne Club).

At the commencement of the eighteenth century it was described as "the choisest and most pleasant situat town in all Scotland."[1]

At the period of the Reformation the long line from the archbishop's castle to the foot of the Saltmarket, at the opening of the Briggait, was built pretty nearly continuously on each side, and houses also occupied both sides of Drygait and Rattonraw or Rottenrow, the Briggait and Stockwellgait, the Trongait and a short piece of Gallowgait. The prebendal manses of the cathedral clergy, in the neighbourhood of the cathedral, were small two-storey houses of stone, the best in the



THE DRYGAIT, NORTH SIDE.[2]

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[1] Hamilton of Wishaw, *Descriptions of Lanark and Renfrew*, p. 4.

[2] Sketch by Thomas Fairbairn, *Relics of Ancient Architecture in Glasgow*, Glasgow 1849, fol. Limmerfield Wynd was to the left.

town, and described in 1587 as "gorgeous policie";[1] but even they, although said to be of great antiquity, had been erected within the preceding one hundred and fifty years.[2] Most of the other houses in the town were of wood,[3] covered with straw thatch.[4] Some of the town houses were cottages; others were tenements divided into heich and laigh, back and fore, containing three or four dwellings a-piece. There were many small booths on the line of the Gallowgait, Trongait and Westergait, and also barns and kilns, bark-holes, bark-houses and bark-lofts, lime-holes and other appliances for tanning.[1]

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[1] Act 1587, c. 113. *Acts of the Parliaments of Scotland*, iii. p. 505. The part of the city above the Gray Friars Wynd is said to be "the onlie ornament and decoratioun thairof, be ressone of the grite and sumptuous buildings of grite antiquitie."

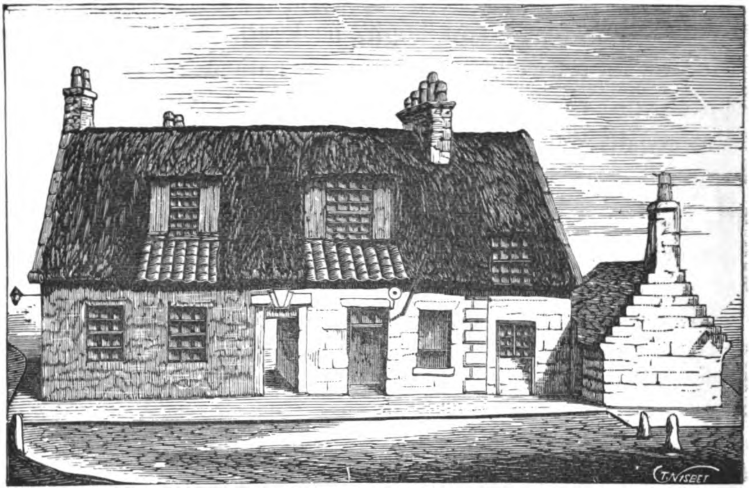
The manses had long gardens behind them. The manse of the Rector of Stobo, on the north side of the Drygait, had an upper and a lower garden, which like the other manses fell to the Crown at the Reformation. When it was subsequently conveyed the king reserved to himself and his successors the right of walking in the upper garden at any time he or they might be resident in Glasgow. *Munimenta Universitatis Glasguensis*, i. p 296. See *infra*, pp. 61, 71.

[2] The manses were not built until after 1435, when Bishop Cameron made it compulsory upon the canons to reside in Glasgow for part of the year.

[3] In 1478 certain houses near the manse of the Rector of Erskine on the west side of Limmerfield Wynd, are specially referred to as "stone houses." *Registrum Episcopatus Glasguensis*, ii. p. 438.

[4] In 1491 a tenant is taken bound to build a house and cover it with tiles. *Registrum Episcopatus Glasguensis*, ii. p. 474. In 1435 one is described as covered with slates. *Liber Collegii N.D.* p. 250. As late as 1681, Parliament enacted that houses in Glasgow were not to be thatched with straw, but roofed with lead, slate or tiles. 1681, c. 97, *Acts of the Parliaments of Scotland*, viii. p. 357. At the beginning of the sixteenth century Aberdeen probably did not contain one private mansion which was not built of timber. Joseph Robertson, *The Book of Bon Accord*, p. 105.

Small as it was as respects population in 1560, Glasgow was a place of great antiquity and of much importance. A thousand years earlier St. Kentigern had established a church in Glasgow, "where he united to himself a famous and God-beloved family of servants of God, who practised continence, and who lived after



A SIXTEENTH CENTURY GLASGOW COTTAGE.[2]

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[1] Tanning was almost the only industry of early Glasgow, and was carried on extensively. It required large quantities of oak bark, which implies available woodland.

[2] This house I remember well. It was known as "Lord Darnley's Cottage," from the popular, but erroneous, belief that it was here that he resided when ill, and was visited by Queen Mary. See *The Picture of Glasgow*, p. 51, Glasgow 1806, 8vo; Bigelow, *Leaves from a Journal*, p. 29, Edinburgh 1824, 8vo. It may have been more recent than the sixteenth century.

the fashion of the primitive church under the apostles, without private property, in holy discipline and Divine service."[1] But Kentigern did not establish himself in a wilderness. It is evident from the narrative that he came to an inhabited place, to a town with an existing community. St. Ninian, it is said, had already visited Glasgow, fully a hundred and fifty years earlier.[2] According to Jocelin of Furnes, Kentigern came to Cathures, which is now Glasghu and there abode near a cemetery formerly consecrated by St. Ninian.[3]

While the early history of the bishopric is obscure there is no doubt that Glasgow had a bishop from the time when the episcopal office took shape in Scotland. The burgh territory and a considerable area of land around Glasgow seem to have been independent of the king from a remote period, and it was only in later years, when feudal ideas gained ground, that a nominal dependence upon the crown was recognized.

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[1] *Vita Kentegerni*, c. 11. According to tradition he settled near the Dowhill; "he sat himself . . . on the brow of a hill called Gwleth, by the burn side (*juxta fluenta*) near his own house—or rather wattle, reed-thatched cottage—(*prope casam suam*)." *Ib.* c. 14. Gwleth forms in combination Wleth, signifying dew, and the place is referred to in one of the poems of Taliessin :

"From Penryn Wleth to Loch Reon,
The Cymry are of one mind, bold heroes."

Taliessin xiv., *The Four Ancient Books of Wales*, i. p. 276.

The chapel of St. Mungo-without-the-walls, or Little St. Mungo's Kirk, was built and endowed in the year 1500. It stood on the Dowhill on the north side of the Gallowgait, on the eastern bank of the burn Malindinor. The chapel was surrounded by a cemetery. *Origines Parochiales Scotiae* i. p. 6; *Glasgow Past and Present*, ii. pp. 469-474. See *Lives of S. Ninian and S. Kentigern*, p. 344, Edinburgh 1874, 8vo.

With Kentigern's house, compare that of St. Voloc, who (*circa* A.D. 400) had "pauperculam casam calamis viminibusque contextam." *Breviarium Aberdonense*, Pars Hyemalis, Propr. SS. fo. xlv.

[2] *Vita Kentegerni*, c. 9. The date of St. Ninian's death is given as 16th September, 432, but the statement does not rest upon authority.

[3] This probably refers to the cemetery at the Cathedral, not to the cemetery on the Dowhill.

The Drygait and Rattonraw, the oldest of our streets, were on the site of a Roman *iter.*[1] The Rattonraw was the most elevated part of old Glasgow, commanding an extensive view of the surrounding country, and was just such a site as would be occupied in prehistoric days as a rath or entrenched hill top.[2] The ground rises steeply from the south and east,[3] more gently

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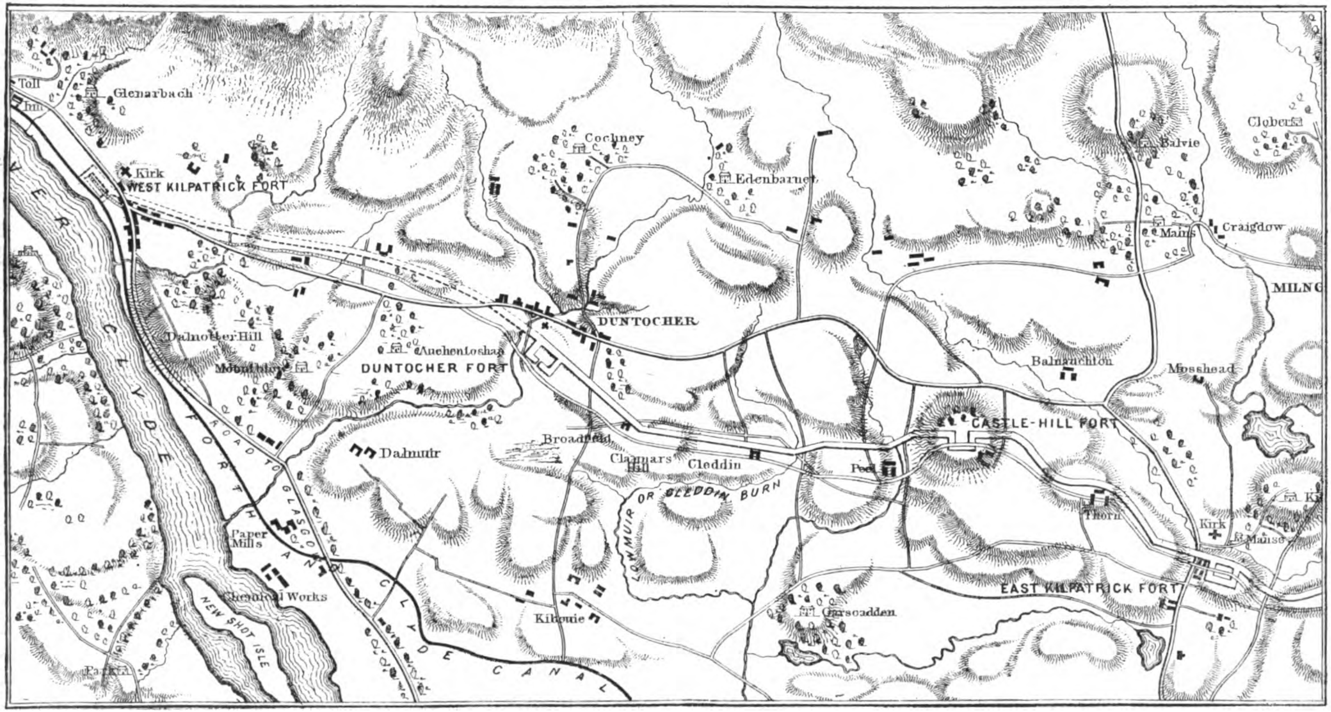
[1] John Buchanan in *Glasgow Past and Present*, ii. p. 455, Glasgow 1884, 4to; *View of the Merchants' House of Glasgow*, p. 516, Glasgow 1866, 4to; Stuart, *Caledonia Romana*, p. 259, Edinburgh 1852, 4to; see also *infra*, p. 66.

The configuration of the burgh territory does not accord with the rectangular plan of a Roman town; but the first residential quarter, at and about the castle, had within it four principal roads or streets running, generally, in the direction of the four points of the compass and meeting at the Wyndheid, where an old cross stood. *Infra*, p. 66. If, therefore, there was a Roman town it must have been around this point as a centre. No remains of Roman buildings have been found in Glasgow; but Roman coins and other Roman objects have been found in and around the city. *The Regality Club*, Third Series, p. 37.

[2] Glasgow is referred to by early Welsh writers under the name Caer Clut. Skene, *The Four Ancient Books of Wales*, ii. p. 415. In England the hill top that has been fortified is called a *bury* (borough or burgh). Maitland, in *English Historical Review*, xi. p. 16.

[3] Prior to 1783 the summit of the "Bell o' the Brae" (? *Veal na bruaich*, brow of the hill) or Bell of the Wyndheid was on a level with the Rottenrow. *Glasgow Past and Present*, i. p. 53. The eastern



KILPATRICK AND THE ROMAN WALL.

Reproduced from Stuart, *Caledonia Romana*; founded on Roy's survey in 1755, which was based on Timothy Pont's map, *circa* 1600, published in Blaeu, *Theatrum Scotiae.*

from the west, forming the highest point in the neighbourhood.[1] To the north it falls towards a small burn that used to wash the gardens attached to the mansions upon the north side of the Rattonraw, now concealed by the tenements upon the south side of Stirling's Road.[2] It was a commanding position and strategically

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slope of the Rottenrow hill would therefore run steeply down to Drygait and so onwards to the burn Malindinor.

As to the "Bell o' the Brae" and the streets adjoining the Cathedral, see Archibald M'Lellan, *Essay on the Cathedral of Glasgow*, p. 133 and *sqq*. In 1832 the ascent at the Bell o' the Brae was 1 in 13.88. *Ib.* p. 136. It need scarcely be pointed out that the levels and configuration of this and the whole neighbourhood have been greatly altered in recent years by the works carried out in connection with what is known as the "Improvement" scheme.

[1] The highest point of the Rottenrow is opposite Balmanno Street, 145⅙ feet above the Clyde; it falls 83⅙ feet to George Street on the south in a distance of 470 feet or roughly 1 in 5½; 30 feet to Stirling Road on the north, in a distance of 400 feet, or 1 in 13; 35 feet to the old cross at the intersection of Rottenrow and Drygait; and 55 feet to John Street on the west. Grafton Place to the north-west and a point in Parson Street to the north, both separated from the Rottenrow by the lower ground forming Stirling's Road, stand 151 feet and 149 feet respectively above the Clyde; but neither spot is so much of a hill as the top of Rottenrow. Gibson, in 1777, draws attention to the fact that "the most ancient part of the city stands upon rising ground." Gibson, *History of Glasgow*, p. 122.

Andrew Foulis, the printer, had gone with "a stranger to the high ground adjoining the ancient residence of the family of Montrose" (presumably the Duke's Lodgings in Drygait), "for having a complete view of the city," when he was seized with a fatal apoplectic fit on 18th September, 1775. Duncan, *Literary History of Glasgow*, p. 37; *Scots Magazine*, 1775, p. 526. *Infra*, p. 61.

[2] See *Diocesan Registers of Glasgow*, ii. p. 171. Three roods of arable land on Provanside are described as lying between the common Vennel of Stable-Green on the north and the burn which washes

a strong one.[1] On the south it overlooked the broad stretch of the Clyde valley, swelling gently into the high lands of the Mearns and the Gleniffers. To the north the eye rested on the long line of the Campsie Fells, with Dungoyne standing sentinel of the Blane Valley, while far to the north-west Ben Lomond rose, plainly visible through the singularly transparent atmosphere for which Glasgow was long famous.[2] Close at

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the ends of the gardens of the houses on the north side of Rottenrow (*Vicus Ratonum*) on the south. This is the Girth Burn. *Infra*, p. 69.

[1] Archibald M'Lellan states that in clear weather the horizon embraces a range of several hundred miles. He says that the peaks of Arran are visible from the base of Knox's Monument in the Necropolis. *Essay on the Cathedral of Glasgow*, p. 142.

The view from the Cathedral spire is graphically described by William Rodger, *Ancient Buildings of Glasgow*, pp. 9, 25, Glasgow 1866. See also Chapman, *Picture of Glasgow*, page 78, ed. 1812; *Glasgow Delineated*, p. 13, ed. 1821; Denholm, *History of Glasgow*, p. 163, Glasgow 1804, 8vo, Third Edition. The view from the gallery in the dome of the Royal Infirmary is described by Sir John Carr, *Caledonian Sketches*, p. 529, London 1809, 4to. The view from the Old Canal Basin, by Professor Wallace, in *Scots Mechanics Magazine*, i. (1825) p. 296.

[2] The quantity of soot and other impurities in the air of Glasgow is now very great. In 1905 in Mains Street, off Argyle Street, just on the western limit of the old burgh, the dust-fall was 35 cwt. per acre per annum. Of the air pollution 58.3 per cent. was mineral matter, 38.4 organic matter, and 3.3 per cent. grease, dissolved out by ether. The factory chimneys emitted every hour of a working day not less than four tons of smuts; and from the dwelling houses there issued in one hour 2564 million cubic feet of spent gases, which represented another ton of smuts. See *Glasgow Herald*, 17 September, 1907.

The rainfall has increased with the smoke. The average for the period 1761-90 was 29.65 inches; the maximum being in 1775, 43.9 inches, the minimum in 1788, 19.41 inches. The average for hand to north and east was a forest tract,—"the fair forrests and schawis schene of Nether Clydesdale," a fragment of which survives in the Forest of Cadzow (pron. Caygae) and whose memory is still preserved in the

the period 1861-90 was 40.26 inches; the maximum being in 1862, 58.98 inches, and in 1872, 56.18; the minimum in 1885, 29.24 inches, and 1889, 30.55 inches.

Even so late as 1771 Glasgow was famed for the transparency of its atmosphere; and it was noted by Robert Sanders that Ben Lomond could be seen from the head of King Street. *The Complete English Traveller*, quoted by Gordon, *Glasghu Facies*, i. p. 19. The passage does not appear in the only edition of Spencer, I know, London 1771, fol. (in which Glasgow is described, pp. 597-599). This book passes under the name of Nathaniel Spencer, but was written by Robert Sanders (1727-83), a Scotsman, a combmaker to trade. The reference is no doubt to the head of High Street. "King" Street was long used in a general way as equivalent to the King or Queen's highway. In old records High Street, Saltmarket, and Briggait are each referred to as "Via regia." Denholm remarks in 1804 that fogs were more rare in Glasgow than in the vicinity of Edinburgh. *History of Glasgow*, p. 425, Glasgow 1804, 8vo. See also Brown, *History of Glasgow*, ii. p. 86.

The Duke of Montrose's Lodging in Drygait, at the head of the High Street, formerly the manse of the rector of Peebles, was noted for its "noble commanding prospect of the whole city and adjacent country." M'Ure, *A View of the City of Glasgow*, p. 47, ed. Macvean. An advertisement of the house and gardens in 1787 says, "The healthful site and pleasant prospect of the country thence obtained is well known." Galloway, *Poems*, p. 179, Glasgow 1788, 12mo.

Brown mentions that when Howard the philanthropist visited Glasgow he went to the head of Rottenrow to view the city. *History of Glasgow*, ii. p. 83.

Wade writing in 1821 recommends the stranger to visit Blythswood Hill (the present Blythswood Square) from which he will have, he says, "one of the finest of views, panoramic in character," which he minutely describes. *History of Glasgow*, p. 152. As to the view from the Rottenrow, see *ib.* p. 140.

place-names Lochwood, Woodend, Blythswood,[1] Woodlands, Woodside, Calton[2] and Eastwood. To the north lay the marshy waste known as the Easter and the Wester Common, which in early days was part of a great woodland[3] that filled the whole country to the

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[1] Andrew Brown, writing in 1795, says that the village of Anderston "is bounded on the north by the wood of Blythswood, the only remains of a forest formerly belonging to Glasgow, in a natural state," *History of Glasgow*, i. p. 110 ; *Regality Club*, Third Series, p. 7.

[2] On the assumption that Calton = the Gaelic *Calltuin*, the hazel; but this is doubtful. The Edinburgh Calton was originally Caldton or Wester Restalrig. The name "Possil" may imply woodland.

[3] The lands of Bishop-forest, an old possession of the See of Glasgow, lay to the north of the city. *Registrum Episcopatus Glasguensis*, ii. p. 376. No one could fell trees or hunt within this tract without leave of the bishop, as in right of the barony. *Ib.* i. p. 147. In 1301 rods were cut for hurdles by Edward I. in the wood of Glasgow. *Calendar of Documents relating to Scotland*, iv. p. 452.

One of the etymologies of Glasgow refers to the woodland character of the place: "'Tis said farther, that, on a tyme, having no oxen to plow the ground, he [St. Mungo] took occasion to shew his disciples what absolute dominion man had over the creatures before the fall, and to this purpose called the deer out of the wood to do the work of oxen, whereupon they obeyed instantly; but one of them being soon after devoured by a wolf, Saint Mungo commanded that very wolf to put himself under the yoke, who did it as soon as commanded (Camerarius). And hence is the name of Glasgow, which signifies a deer and wolf." "MS. Account of Scotch Bishops" in *Illustrations of the Topography of Aberdeen and Banff*, ii. p. 166. See *Vita Kentegerni*, c. 20. The names Glasgow and Glasgow-Forest occur in Aberdeenshire, and Glascogrene in Kincardineshire.

In 1136 a piece of land in Perdeyc (Partick) is granted "in wood and clearing" (*in nemore et plano*). *Registrum Episcopatus Glasguensis*, i. p. 9. In the sixteenth century Partick was still surrounded by a wood in which the rentallers of the Archbishop had right of common pasturage. Laird of Knockdolian *v.* Tenants of Parthick, 1583, *M.* 14,540, north and north-east. The Clyde, a clear flowing stream,

> Glotta latus cingens electro purior omni est,[1]

full of salmon and frequented by the sturgeon and the herring,[2] was passable at sundry fords, while the water,

14,541. Perthec—the original name of Partick—means "little wood" in the British tongue.

About 1210 Walter the Steward granted authority to the Abbey of Paisley to cut growing timber for building purposes in his forest—and to take dead wood for fuel. *Registrum de Passelet*, p. 17.

As to woodland around Paisley, see Brown, *History of Paisley*, i. p. 19.

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[1] Arturi Ionstoni, *Poemata omnia*, p. 433; *Joannis Blaeu Theatrum orbis terrarum Pars Quinta*, p. 62, Amstel. 1654, fol. He also refers to the

"Thetis agmina gentis
Squammigerae."

[2] A sturgeon was sent from Glasgow to King James IV. on 9th June, 1496. *Accounts of the Lord High Treasurers*, i. p. 277. The sturgeon is enumerated as one of the fish found in the river and firth of Clyde in 1793. *Old Statistical Account*, v. p. 536.

William Dunlop, principal of the University (1690-1701), gives an interesting account of the herring fishing. Hamilton, *Descriptions of Lanark and Renfrew*, p. 142. On 6th November, 1786, herrings were seen in the Clyde as far up as the Peat Bog. *The Glasgow Almanac for* 1787, p. 187. By the great charter of Holyrood (*circa* 1143) there were granted to the canons a toft of 5 perticates in Renfrew with the draught of one salmon net and the free fishing of herring there. *Liber Cartarum Sancte Crucis*, p. 5, Edinburgh 1840, 4to. About the year 1163 Walter the Steward (*dapifer regis*) granted to the Abbey of Paisley one plenary or complete tenement or toft (*maysura*, ? *mansura*) in his burgh of Renfrew, one salmon net, six herring nets and one cobble (*batelus*). *Registrum de Passelet*, p. 2. "The takeris" at Renfrew "gyue sik labour to fisheng that thair oft may be sene hail lx of fisher botes occupiet in fisheng all baith the spring and summer tyme." Leslie, *Historie of Scotland*, translated by Father James Dalrymple, constantly overflowing the low grounds on both sides, converted them into a vast lagoon, still commemorated in Provosthaugh, Linningshaugh,[2] Polmadie, Parson's or Rankin's Haugh,[3] Kelvinhaugh, Meadowside, King's

i. p. 15. The "Bark-house" in which the herring nets were tanned still stands in the Ferry Road of Renfrew.

At the end of the eighteenth century the salmon fishing in the lower reaches of the Clyde, between Govan and Erskine, was still extensive. There were also large quantities of red trout taken, and considerable quantities of smelts and shrimps. *Old Statistical Account*, ix. p. 62.

Earlier in that century the White Cart, at Paisley, was famous for its pearl fishery. Principal Dunlop, *ut supra*, p. 143; and according to Froissart pearls were exported in his day from Scotland to Flanders.

[1] Sir William Brereton, writing in 1636, says that the river ebbed and flowed above the bridge "though now the water is so shallow, as you may ride; under the horse belly." *Travels*, p. 116 (Chetham Society), 1844, 4to.

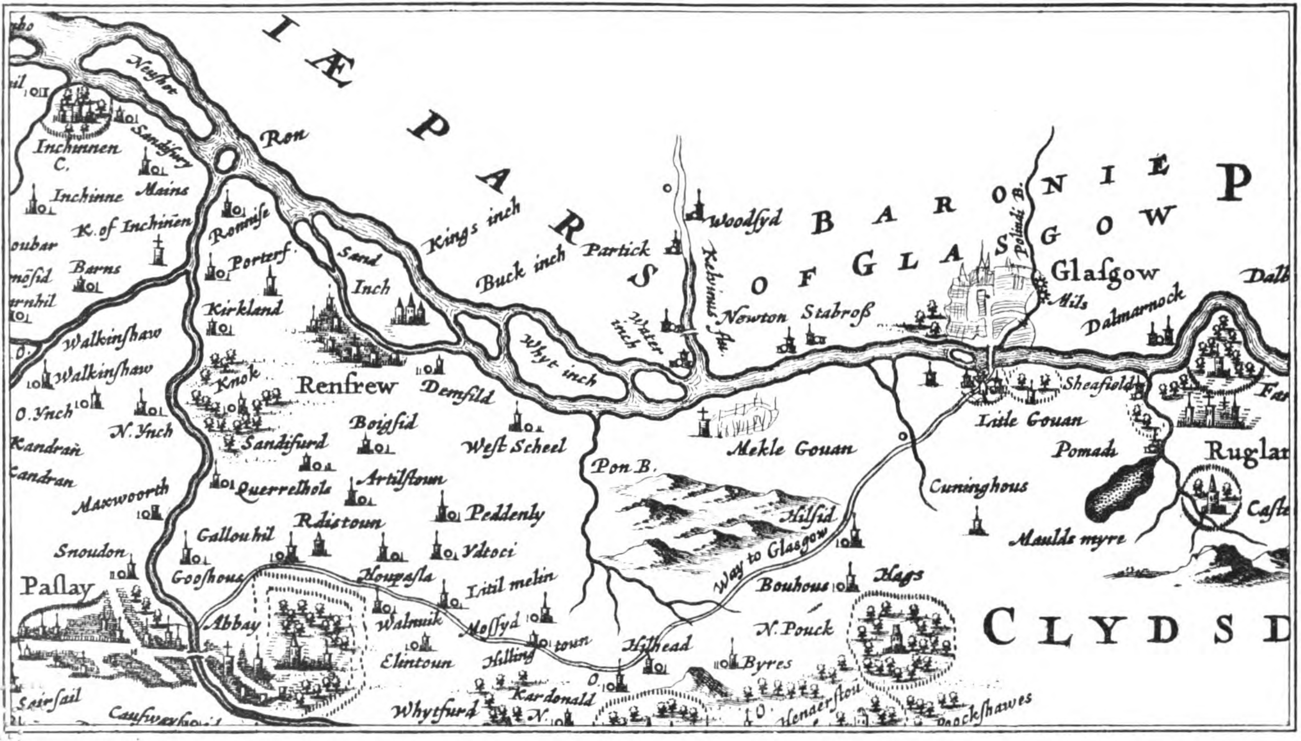
Defoe in 1727 described Glasgow thus:—"It stands on the side of an Hill, sloping to the River; only that part next the River, for near one-third of the City, is flat, and by this means exposed to the Water upon any extraordinary flood. It is situated upon the east [*sic*] bank of the Clyde which is not Navigable to the town but by small Vessels." *A Tour thro' Great Britain*, iv. p. 122, London 1753, 8vo.

On 25th and 26th November, 1454, there was a great flood which put all Govan under water. *Ane Short Memoriale of the Scottis Cornikilis for addicioun*, p. 18.

In commemoration of a great flood in Glasgow on 12th March, 1782, there was established "The 12th March Club," the medal and chain of whose president is now in Kelvingrove Museum.

[2] Linningshaugh lay between the Clyde on the south, and the burn Molindinar on the north and west sides, and was liable to great injury by spates. See Renwick, *Protocols*, Nos. 1654, 2633.

[3] Parson's Haugh or Rankin's Haugh lay immediately to the west of the burgh and between it and the lands of Stobcross. Renwick, *Protocols*, No. 1037. Washington Street, which is extra-burghal, is on Parson's Haugh. *Glasgow Journal*, 16 August, 1756. Rankin's Haugh



THE CLYDE AT AND BELOW GLASGOW.

Reproduction of part of Timothy Pont's map of Renfrewshire, *circa* 1600; published in Blaeu, *Theatrum Scotiae.*

Meadow, the Isle and Govan Marsh. In the channel there rose numerous heights or 'inches'—the King's Isles, King's Inch of Dalmarnock, The Point Isle, Dowcot Isle,[1] Water Inch, White Inch and Buck Inch.[2]

On or beside the Grummell[3] Knowe, a huge mound of earth, midway between St. Kentigern's settlement and the high ground in Rottenrow, there stood a

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belonged to the prebend, Glasgow Primo, hence the name Parson's Haugh. *Inquisitionum Retornatarum Abbreviatio*, Lanark, No. 53.

"The lands of Stobcross, Cranstonhill and Rankinshaugh . . . very beautifully situated upon the river Clyde, a mile west from the city of Glasgow," were advertised for sale. *Caledonian Mercury*, 29 April, 1775; *Edinburgh Advertiser*, 30 January, 1776; *Edinburgh Evening Courant*, 30 March, 1776. See also *Glasgow Mercury*, 5 May, 1785.

In 1824 Rankinshaugh was included within Anderston, which was then created a burgh, and in 1846 Anderston was incorporated with Glasgow. There is a plan of the burgh and barony of Anderston, 1839-40, by Andrew Macfarlane in the Kelvingrove Museum.

[1] The portion of the Old Green between Stockwell Bridge and Jamaica Street Bridge fronting the river was known as the Dowcat Green. See Senex (Robert Reid), *Old Glasgow*, p. 68. *Glasgow Past and Present*, ii. p. 311; iii. p. 67. It was so called, presumably, on account of its liability to flooding. In the burgh of Hamilton there was the Dowcat aiker or Water aiker. *Inquisitionum Retornatarum Abbreviatio*, Lanark, No. 300: and in Ayr there was also a "Dukat aiker."

[2] Lower down are the "King's Inch" or "Inch of Renfrew," where Elderslie House now stands, Sand Inch, Newshot Isle, Inchinnan and Collin's Isle. See Map of the Clyde.

In the twelfth century mention is made of "the islands between Guvan and Perthec." *Registrum Episcopatus Glasguensis*, p. 11; Hamilton, *Descriptions of Lanark and Renfrew*, p. 232. Robert III. granted to Robert Hall the lands called Castle Vallie of Rutherglen and the King's Isles. Robertson, *Index . . . of Charters*, 137, 13, Edinburgh 1798, 4to.

[3] Grummell = ? the common grummel, gromwell, graymill, or *lithospermum*. In 1599 the Grummell Knowe at Drygate Heid was removed, to fill up holes about the town. *Burgh Minute*, 27 July, 1599.

cross[1] parting the four streets, which for many centuries constituted the city of Glasgow. To the east ran the Drygait, down the slope of the hillside to the burn Malyndonar or Malindinor—on the banks of which St. Kentigern received St. Columba[2]—following the track of the old Roman vicinal way to Carnton or Carntyne, and the Clyde Ford at Dalmarnock,[3] and by its name seeming to connect the spot with the religion of paganism;[4] westwards, as Rottenrow, it led to the upper part of the town, and thence onwards to Partick, beyond which was the road to Dumbarton.[5]

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[1] It stood within the ambit of the Rottenrow, on its south side. *Registrum Episcopatus Glasguensis*, ii. 495; *The Regality Club*, 3rd Series, p. 38. Sir James Marwick doubts whether this was a market cross. *The Water Supply of Glasgow*, p. 2, Glasgow 1901, 4to.

[2] *Vita Kentegerni*, c. 39.

[3] See *The Literary Rambler*, p. 179, Glasgow 1832. *Infra*, p. 134. "Nothing is so lasting as a street; nothing is so little lasting as the particular houses of which the street is made up." Freeman, *English Towns and Districts*, p. 157.

[4] See James Pagan in *Relics of Ancient Architecture in Glasgow*, p. 1. Glasgow 1849, fol.

[5] "Via que ducit ad Partwich," 13th September, 1494. *Liber Collegii Nostri Domine*, p. 258, used in reference to 5 roods of land in Cribbs Croft, between Ramshorn on the south, and the continuation of the Rottenrow on the north. Brown (*History of Glasgow*, ii. 86) refers to Dobbie's Loan as an old Roman road; and John Buchanan says (*Glasgow Past and Present*, ii. p. 455) that the Roman *iter* proceeded through Drygate, crossing the Malindinor Burn "and onwards by Dobbie's Lone, till this branch causeway for the march of the legions, and the transport of their warlike stores joined the famous Antonine Barrier, near Duntocher and West Kilpatrick." See *supra*, p. 28.

In another passage, he conjectures that there was a small fort near the High Church, to guard the gorge now known as the Ladywell, through

Southwards and northwards were the streets, long nameless, afterwards known as High Street and Kirkgait, continued as Castle Street; the former leading to the ford of Clyde, a little to the east of the Stockwellgait,[1] the latter running on to the Roman Wall, which it crossed at Bemulie, or Balmulie, three miles off.[2]

The episcopal foundation was remodelled about the beginning of the twelfth century, and a commission was appointed by David, when Prince of Cumbria, for the purpose of ascertaining the possessions which of old belonged to the Bishop of Glasgow. Steps were taken to rebuild the Cathedral, and the new church was dedicated on 7th July, 1136. Whether Glasgow grew out of a prehistoric stronghold or settlement is not known, but it is certain that it was the seat of ecclesiastical authority in Strathclyde from the dawn of Christianity. Considerable portions of land around the burgh belonged to the See, and as there is no record of any grant it may be assumed, as reasonably certain, that they belonged

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which the military road ran, in its course from Shettleston by Dobbie's Loan and the right side of the Clyde to the western termination of the great Rampart of Antoninus. John Buchanan, in *The Edinburgh Topographical . . . and Antiquarian Magazine*, p. 137 (Edr. 1848).

There are now no remains of a Roman road on the site of Dobbie's Loan. It is an old road and long formed the access to the plough-land and pasture land of the Wester Common; it took its present name from one John Dobbie, who had land abutting on it.

[1] Cleland, *Rise and Progress of Glasgow*, p. 273.

[2] There is a local tradition that in ancient times a great annual fair was wont to be held at Bemulie, to which the natives came to traffic with the Romans. Stuart, *Caledonia Romana*, p. 317, 2nd edition.

to the Church from a remote period. At what time the burgh took shape, and its constitution became fixed, we cannot tell, but as it existed at the beginning of the twelfth century, very much in the same state as it did for many centuries later, the inference is that it had so existed for many centuries earlier. The burgh territory has remained the same from the time that Glasgow first appears on record down till now; and its constitution, when we first hear of it, was the same as it was in the fifteenth century.

The burgh was not subject to the jurisdiction of the King as exercised either by the Justiciar, the Chamberlain, or the Sheriff. The territory surrounding the burgh which belonged to the bishop was demesne land, with dependent touns or vills, occupied by kindly tenants or villeins. In process of time it came to be recognized as a barony, and at a later period it was erected into a regality. The barony, and subsequently the regality, had their own courts independent of those of the king's sheriff. Whether the bishop originally claimed right to control the burgh in any way does not appear. What we do know is, that in the earliest records in existence Glasgow appears as a burgh organized in accordance with the usages set out in the *Leges Burgorum*; managing its own affairs, holding its own courts, and possessing its own common seal.

The principal buildings of early Glasgow were the cathedral and the adjoining castle of the bishop—the palace as it is often called.[1] On the road a little to the north of the Stable-green stood the Girth Cross,[1] and about three hundred yards to the south was the Girthburne,[2] the intermediate space forming a girth or sanctuary, probably extending to the Grummell Knowe.[3]

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[1] *E.g.*, *Diocesan Registers*, ii. pp. 185, 188, 190, 312, 322, 326, 343, 394, 426; *Registrum Episcopatus Glasguensis*, ii. p. 589; *Registrum de Passelet*, p. 355; Pitcairn, *Criminal Trials*, i. pt. ii. p. *269. The

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palace and castle are distinguished, *Registrum*, i. p. 167, where we have "pallacium suum quod est extra castrum Glasguense."

Freeman points out, *English Towns and Districts*, p. 144, that the episcopal palace and the episcopal castle are different things. The palace is strictly the bishop's dwelling in the episcopal city; an episcopal castle in the episcopal city was exceptional, and is found where the bishop also held a temporal lordship, in which the episcopal city was the principal place.

The castle of Glasgow is described in 1561 as "the principall mansioun and duelling place of the bischop thereof." Marwick, *Charters of Glasgow*, i. pt. 2, p. 127. *Infra*, ch. xiv.

[1] *Registrum Episcopatus Glasguensis*, ii. p. 537. Renwick, *Protocols*, Nos. 618, 676, 1139, 1268.

[2] This is an inference from the name. The course of the Girth Burn is not well defined. See *Liber Collegii N.D.* p. 238; Fraser, *The Maxwells of Pollok*, i. p. 180. *Supra*, p. 60.

It is shewn on Fleming's map (1807), and on Smith's map (1821), and rises about the corner of Montrose Street and Stirling's Road and flows eastward, to the south of the line of Stirling's Road, under the houses. At Taylor Street it is about 40 feet south of Stirling's Road and about 19 feet under the present surface. It passes under the Receiving House in Weaver Street, through the site of the old Gas Works (formerly the site of St. Nicholas' Hospital), crosses Drygait and falls into the Malindinor beside the Bridge of Sighs. It is partly in sewer, partly in square built drain. (Information supplied to me in 1885 by the late Mr. John Carrick, Master of Works.) See Cleland, *Annals*, ii. pp. 331, 332.

[3] As to girths or griths see Joseph Robertson, *Statuta Ecclesiae Scoticanae*, ii. pp. 261, 271; E. W. Robertson, *Scotland under her Early Kings*, ii. p. 47; Innes, *Scotland in the Middle Ages*, p. 194; Flach, *Origines de l'ancienne France*, ii. pp. 193, 364 *sqq.*, Paris 1885, 8vo. His theory

The only portion of Glasgow occupied by dwellings down to the thirteenth century was a small area between the bishop's castle on the north, the southern limit of

as to the connection between grant of sanctuary and town organization is well explained by Ashley, *Surveys historic and economic*, p. 181 *sqq.*

"To the kyrk rane, wend gyrth for till haiff tayne."

Schir William Wallace, x. 1047.

It was usual to define the limits of the girth by crosses, and the cross at the intersection of the Drygait and the Rottenrow with High Street, may have been such a cross corresponding with that upon the north side.

St. Kentigern was in use to set up crosses in places where he laboured, and set up one of stone of extraordinary size in the cemetery of his own church in Glasgow.

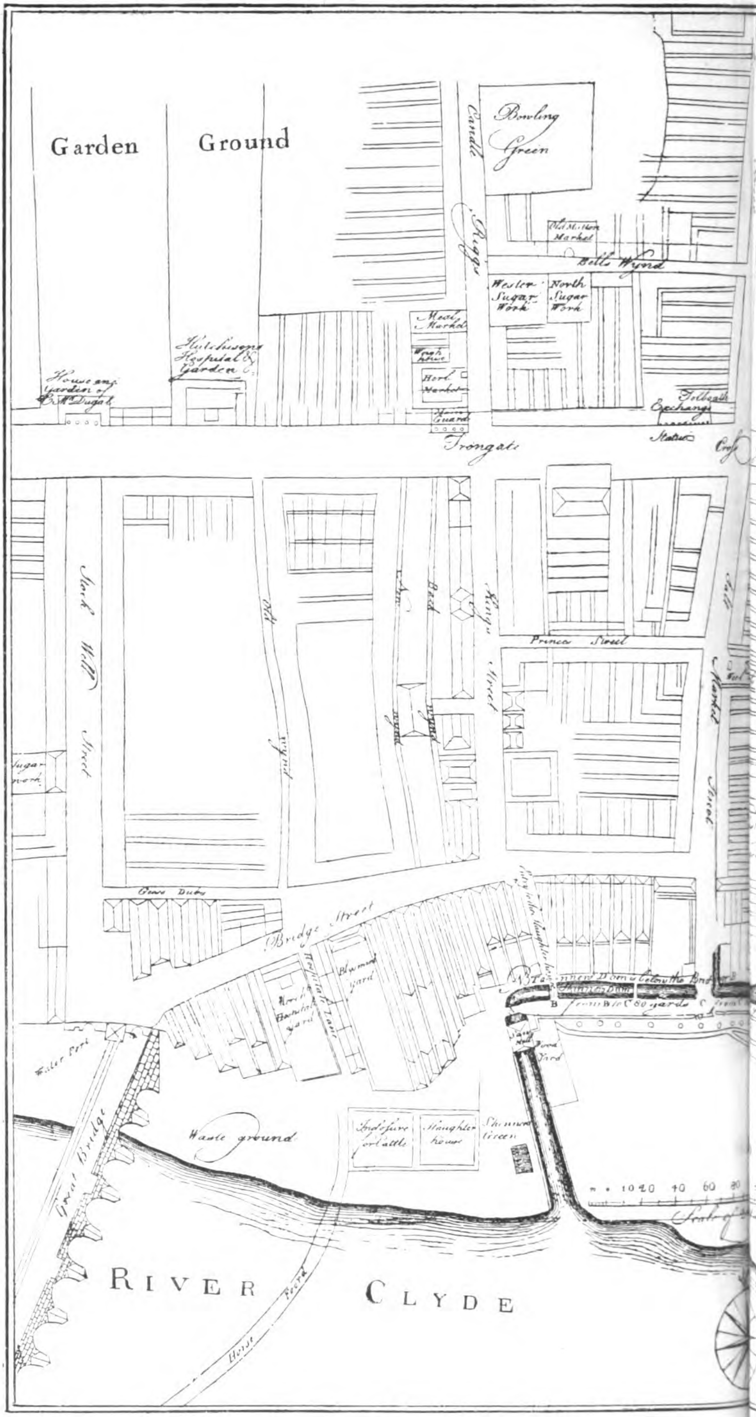
"Thay bryng mad men, on fuit and horsse
And byndis thame to Sanct Mongose crosse."

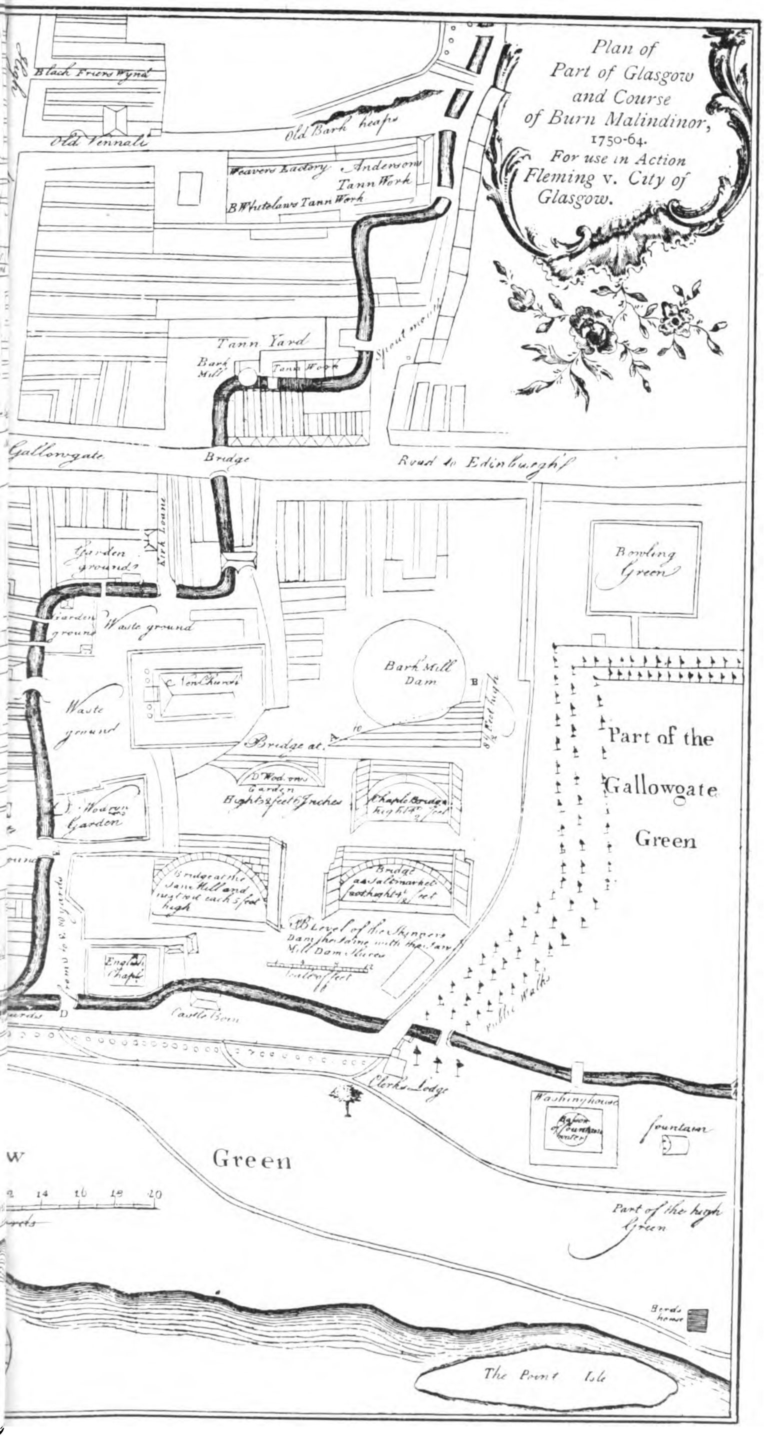
Lyndsay, "Ane Dialog betuix Experience and ane Courteour." 2373, *Works*, ii. p. 314, Edinburgh 1871, 8vo.

"This cathedral [Aberdeen] had the privilege of a sanctuary, or girth, and had a Girth Cross on the Bishop's dovecote-green, which was a sure refuge for manslayers, or such as had committed slaughter by pure accident and misfortune, without any malice or design." View of the Diocese of Aberdeen, in *Collections for the Shires of Aberdeen and Banff*, p. 151 (Spalding Club).

The Girth Cross of the Sanctuary of Holyrood stood near the foot of the Canongate. Mackay, *History of the Burgh of Canongate*, p. 158; *Miscellany of the Maitland Club*, ii. p. 334. The girth or sanctuary of Lesmahago was marked by four crosses. *Liber de Calchou*, i. pp. xxii, 9, 10. At Hexham there were four crosses set up, at a certain distance from the church, in the four ways leading thereto, in order to indicate the limits of sanctuary. Romilly Allen, "Notes on Interlaced Crosses" in *Journal of the British Archaeological Association*, xxxiv. (1878) p. 354; Ripon Cathedral had the privilege of sanctuary, and eight crosses, called Mile Crosses, marked the boundary. Walbran, *Guide to Ripon*, p. 30.

In Germany a cross (*crux bannalis*, *Freiheitskreuz*) marked the limits of the liberties of the town. Von Below, *Ursprung*, p. 35 n. 1.


Garden
Ground
Candle
Riggs
Bowling
Green
Old Mutton
Market
Bells Wynd
Wester
Sugar
Work
North
Sugar
Work
Meal
Market
Weigh
house
Herb
Market
Main
Guard
Tolbooth
Exchange
Statue
Cross
Hutchesons
Hospital &
Garden &c
House and
Garden of
C. McDugal
Trongate
Stock Well Street
Old Wynd
New Wynd
King Street
Princes Street
Salt
Market
Street
Sugar
work
Goose Dubs
Bridge Street
Hutcheson Lane
North
Hutcheson
Yard
Yard
Way to the Slaughter house
Tanners Dam below the Bridge
Skinners Dam
B
from B to C 80 yards
C
Poor
Yard
Water Port
Great Bridge
Waste ground
Inclosure
for Cattle
Slaughter
house
Skinners
Green
10 20 40 60 80
Scale of
River
Clyde
Horse Ford



Plan of
Part of Glasgow
and Course
of Burn Malindinor,
1750-64.
For use in Action
Fleming v. City of
Glasgow.

the Rottenrow and Drygait on the south, the burn Malindinor on the east, and the summit of the Rottenrow on the west,[1] described as late as in 1594 as "being the maist commodious and cheif pairt of the said citie for the receipt" of the king and his court.[2] In course of time the houses crept slowly down the hill to the site of the old Blackfriars monastery and Greyfriars Wynd, and thence onwards to the market cross—the *crux foralis* of the records—the cross of to-day.[3] At the same time building commenced eastwards along the line of what is now the Gallowgait, and westwards along Sanct Tenew's gait, our Trongait. Somewhere about the year 1350 Bishop Rae built a stone bridge across the river, which probably indicates that, with the expansion of the town, there was something of a traffic with the south side of the Clyde. By the river side there were two small colonies, the Waulkers or Fullers, and the Fishers, who gave name to the two streets in which they dwelt, the Walcargait and Fishergait (*Vicus Fullonum* and *Vicus Piscatorum*), now the Sautmercat, Saltmercat or Saltmarket,[1] and the Stockwellgait or Stockwell.[2] In early days lands in Glasgow were granted with the draught of a net in the Clyde as a pertinent,[3] and the fishers were for long an important class of citizens, and naturally settled by the stream on which they worked.[4] The fishermen, it is said, were an ancient corporation,[1] but no records have been preserved which establish this. Fishermen, however, were, in England, annexed to many Anglo-Saxon lordships, and even now exist as prescriptive corporations.[2]

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[1] This is shown by an examination of the deeds in the Episcopal Register. Cf. "Senex," *Glasgow Past and Present*, iii. p. 70.

[2] Act 1594, c. 56. *Acts of the Parliaments of Scotland*, iv. p. 79.

[3] Bishop Jocelin (1175-99), who had formerly been Abbot of Melrose, granted to his old Abbey a plenary toft in the city of Glasgow "namely that toft which Ranulph de Hadintun built in the first building of the burgh." *Liber de Melros*, i. pp. 36-38. This croft was apparently on the south side of Trongait (*Liber Collegii N.D.* pp. 174, 235, 236), and the first building of the burgh may therefore mean the extension of building to this part of the burgh territory; and the *crux foralis* may have been established there at this time. This happened in many cases in France. "A new town *la ville* has grown up and left the ancient *cité* as a quarter mainly ecclesiastical or aristocratic." Freeman, *Historic Towns. Exeter*, p. 9.

When Robert, bishop of St. Andrews, established the burgh of St. Andrews he granted three tofts in it to Mainard the Fleming, because he had begun to build and renew the burgh (*Acts of the Parliament of Scotland*, i. p. 53; *supra*, p. 32). This indicates that there was an already existing town.

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[1] The salt market was established in the Walcargait for the convenience of the fisher folk, and when the waulkers began to disappear the name of the market was transferred (about the middle of the seventeenth century) to the street, and remained with it after the salt market had been removed elsewhere.

[2] Via Piscatorum siue le Stokwoll. *Munimenta Universitatis Glasguensis*, i. p. 50. Johannes Leiche piscator in vico extendente ad Pontem Glasguensem [*i.e.* the Briggait]. *Ib.* i. p. 35.

[3] Bishop Jocelin (1175-99) granted a plenary or complete toft in the burgh of Glasgow to the Master of the Temple in Scotland; and the latter transferred it to William Gley of Glasgow, who had formerly held it "with one net's fishing in Clyde, and with all the common easements of the territory of Glasgow in wood and waste, in pasture and otherwise." *Registrum Episcopatus Glasguensis*, i. p. 37.

[4] In 1576 the salmon-fishers were still prominent. *Burgh Records*, 3 March, 157$\frac{5}{6}$; *ib.* 7 March, 158$\frac{0}{1}$; 21 April, 1589. "Of old the city was well furnished with salmon-fishing on the river Clyde; and there was an incorporation of fishers above an hundred years ago (*i.e.* prior to 1636), but is now (1736) quite away by reason of lyming of land and steeping of green lint in the river, which kills the salmon." M'Ure, *A View of the City of Glasgow*, p. 122, ed. Macvean. In a lease of the Peit Bog and Dassie Green, granted in 1666 for 19 years, it was made a condition "that it sall be leasume to the burgessis inhabitantes of this burghe, who sall tak and fish salmond be thair cobillis in the water thairabouts, to dry thair netes on the saides

Why the waulkers were separated from the rest of the community is not, however, so obvious. Under the early charters of some burghs,[3] weavers and waulkers were excluded from certain burghal privileges, and

landes of Peitbog as they ar now and hes bein in use," subject to a payment for the convenience. The rent of the land, it may be added, was £16 Scots or £1 6s. 8d. Stg. Marwick, *Charters of Glasgow*, ii. p. 345. In 1682 the salmon fishers were using the adjoining lands of Provosthaugh for the same purpose. *Ib.* p. 381.

In 1679 an order was made by the town council forbidding the killing of "salmond fry within the boundis of the tounes libertie on Clyd." *Burgh Minutes*, 15 March, 1679. It is thus evident that the salmon fishers of Glasgow were still actively engaged in their calling in the Clyde at Glasgow Green until at least the end of the seventeenth century.

One of the favourite shots for their nets was opposite the Peatbog, and numbers of net sinkers—round, flat, biscuit-shaped stones, with holes in them for passing a fastening through—have been found in the bed of the river at this place.

A century later, in 1787, fifty-one salmon were taken at one draught of the net, at Meikle Govan, several of them from 30-40 lb. weight, and the smallest upwards of 6 lb. *Glasgow Mercury*, 2 May, 1787.

As late as 1833 the salmon fishings appear in the burgh accounts, but they are entered at the merely nominal value of £5 a year.

[1] M'Ure, *A View of the City of Glasgow*, *supra*, p. 72, note 4.

[2] Palgrave, *The English Commonwealth*, i. p. 333.

[3] "Concedo etiam burgensibus eisdem meis de Perth, ut habeant gildam suam mercatoriam, exceptis fullonibus et telariis" (fullers and weavers). Charter to Perth by William the Lion. *Acts of the Parliaments of Scotland*, vol. i. p. 86; Cowan, *The Ancient Capital of Scotland*, i. p. 216. There is the same exception in the charters to Aberdeen

although there is no evidence that this was the case in Glasgow, it is possible that it was on account of some reason of this nature that these useful tradesmen established themselves at about a mile's distance from the town. There is, however, the question of water power. The waulkers had no doubt a waulk miln, and it probably stood on the lower reaches of the burn Malindinor. That stream runs a little to the east of the Saltmarket—their Walcargait—and unites with the Camlachie Burn running west, some distance to the south end of that street, as it then existed.[1] At this point, in later times, both the tanners and the skinners had

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and Stirling by Alexander II. *Acts of the Parliaments of Scotland*, p. 87; Kennedy, *Annals of Aberdeen*, i. p. 11; *Stirling Charters*, p. 8.

See as to Winchester, and the question generally, Riley, *Gildhallae Liber Custumarum*, pp. lxi, lxviii, 130; Gross, *The Gild Merchant*, i. pp. 108, 213. Much information regarding Fullers will be found in Bickley, *The Little Red Book of Bristol*, ii. p. 7 *sqq.*, 75 *sqq.*, 141; Toulmin Smith, *Early English Gilds*, p. 180.

[1] The Saltmarket did not extend further south than the Briggait. The extension southwards to the Clyde is modern. See Map, p. 80.

The opening up of the south end of the street and throwing a bridge across the river was suggested in 1792. See *Glasgow Courier*, 1, 8, 29 September, 1792. The bridge was resolved upon in 1793, *ib.* 12 March, 1793, and the foundation stone laid in 1794. It was nearing completion when it was swept away by a flood in November, 1795. A wooden footbridge was then erected, to give communication with the Gorbals, at that time a summer retreat for Glasgow people (*Glasgow Mercury*, 19 April, 1791). A new stone bridge was erected in 1829. *The Clydesdale Magazine*, p. 351, Glasgow 1818, 8vo. Swan, *Views of the Clyde*, p. 115; [Cleland] *Account of the . . . Procession, at laying the foundation stone of Hutchesons' Bridge*, [Glasgow, 1829, 8vo].

To those of us of an older generation, the Saltmarket of a comparatively few years ago—the Saltmarket too of Bailie Nicol Jarvie—is dams,[1] and the waulkers may have found the locality equally convenient for their work. Another possible explanation is that the waulkers did not settle in Glasgow until the *crux foralis* was set up at the head of the Walcargait, and in that case they would naturally establish themselves in its neighbourhood and in the lower part of the burgh.

The rule as to the exclusion of fullers from towns was not universal. Under the charter of Salford (*circa* 1230) no shoemaker, skinner (*pelliparius*), fuller, or the like was permitted to exercise his calling within the wapentake, except within the borough of Salford itself.[2] The fullers availed themselves of the proviso, and had their walk or fulling mill in the Walkers' Croft, on the banks of the Irk near its confluence with the Irwell, the oil from which is said to have made the eels so fat that in 1282 it was estimated to be of the annual value of 26s. 8d.[3]

not recognizable in the wide, gaunt space which now passes under that name. Messrs. MacVittie, MacFin and Company would not recognize the Gallowgate, where they had their counting-house, as it now exists. As to the alterations, see *Glasgow Past and Present*, i. p. lxvi; Letter by Dr. J. F. S. Gordon in the *Glasgow Herald*, 20 July, 1892.

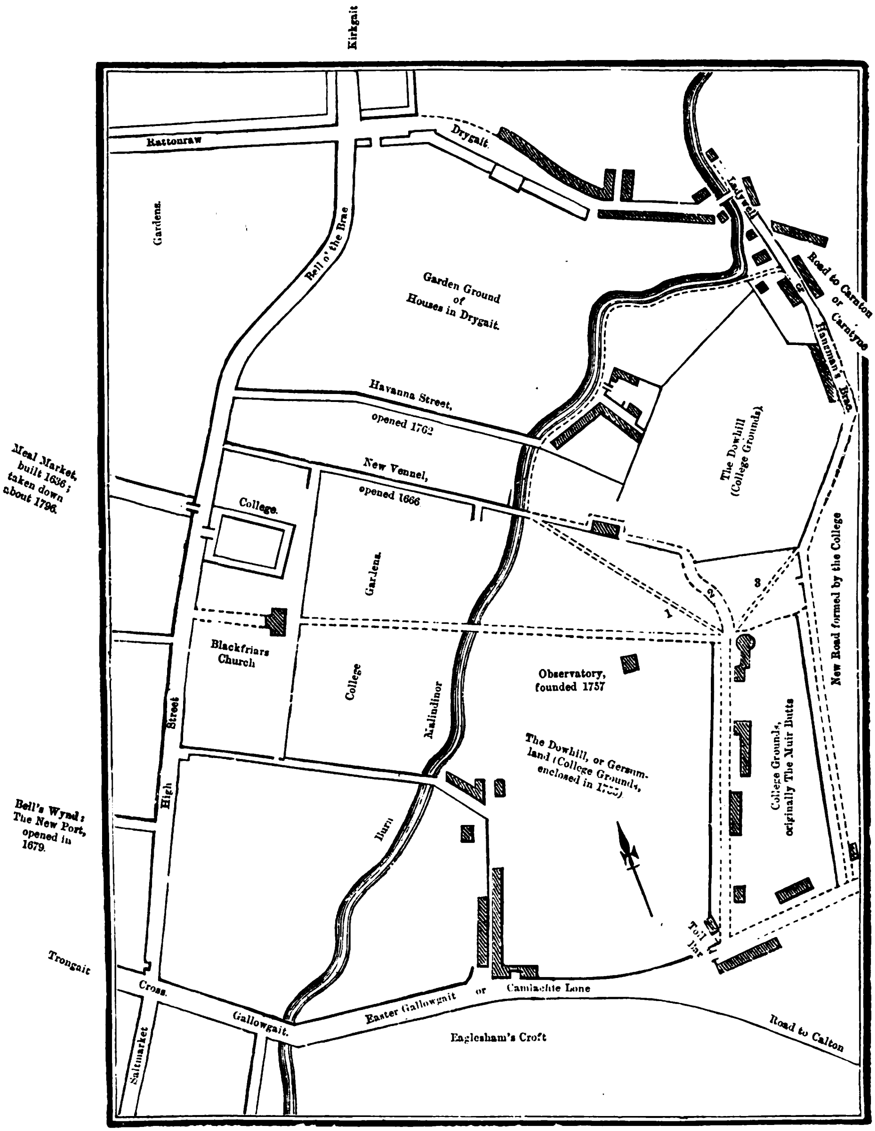
[1] See map of 1760, reproduced p. 80.

The Waulkers of Dundee had their fulling mills along the course of the burn and "stentit" the cloth to dry upon the common meadow. Maxwell, *Old Dundee*, p. 328, Edinburgh 1891, 4to. See *The Regality Club*, Third Series, p. 82.

[2] Baines, *History of the County of Lancaster*, ii. p. 24, Manchester 1889, 4to; Harland, *Mamecestre*, i. 202, [Manchester] 1861, 4to (Chetham Society); Tait, *Mediaeval Manchester*, pp. 50, 91.

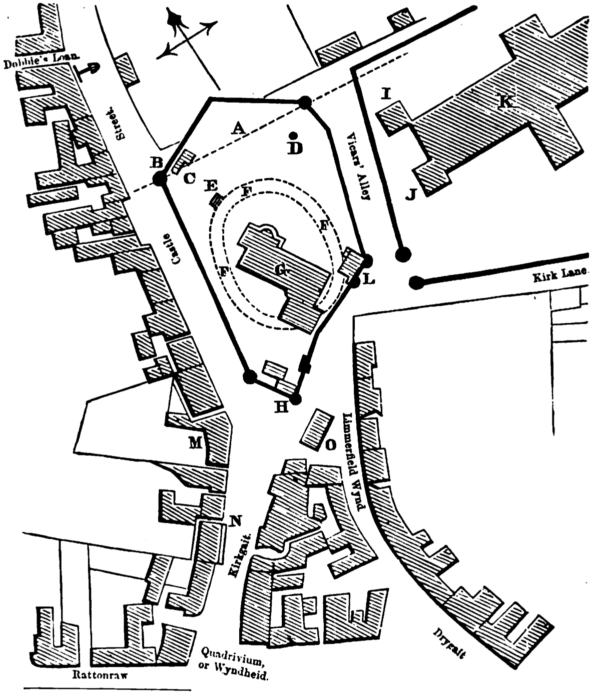
[3] Harland, *ut supra*, i. p. 10; ii. p. 315.

It was agreed by the community of the Gild of Merchants of Leicester that none of them should keep a fulling mill outside the town, unless it were by consent of the community, of the owner of the cloth, and of the fuller of Leicester. Bateson, *Records of the Borough of Leicester*, i. p. 91.


Kirkgait
Rattonraw
Drygait.
Ladywell
Road to Carnton or Carntyne
Hunsman's Brae
Gardens.
Bell o' the Brae
Garden Ground of Houses in Drygait.
Havanna Street, opened 1762
New Vennel, opened 1666
Meal Market, built 1636; taken down about 1796.
College.
Gardens.
The Dowhill (College Grounds)
New Road formed by the College
1
2
3
Blackfriars Church
College
Molindinor
Observatory, founded 1757
The Dowhill, or Gersum-land (College Grounds, enclosed in 1[illegible])
College Grounds, originally The Muir Butts
Street
High
Bell's Wynd; The New Port, opened in 1679.
Burn
Toll Bar
Trongait
Cross.
Gallowgait.
Easter Gallowgait or Camlachie Lane
Eaglesham's Croft
Road to Calton
Saltmarket

Plan prepared in 1777, in reference to a Right-of-Way claimed through the College Grounds.

1 was the original site of the road in dispute.
2 and 3 were the roads claimed.



A, Front Wall of Royal Infirmary.
B, Circular Wall Tower. Here was the Stable-Green Port, so termed from its contiguity to the Castle Stables. It is said to have been erected in 1541. It was surmounted by a battlement. (Wodrow, *History of the Church of Scotland*, iv. p. 255.) The ruins of this Port were standing in 1771.
C, (Supposed) Stables of Castle.
D, Stone for fixing the Gallows in the Castle-Yard. The *Castle-Yard* in 1784 became the place for public executions; and, as the Culprit came from the Old Tolbooth at the Cross, the cart stopped opposite the *Alms House*, and a Verse of a Psalm was then sung, intermingled with the plaintive notes of its Bell.
E, Draw-Bridge (where found).
F, Ditch or Fosse round Castle.
G, Castle or Palace.
H, Great Tower, built by Bishop Cameron in 1430, and augmented a century afterwards by Archbishop Beaton.
I, Bell Tower of Cathedral.
J, Consistory House.
K, Cathedral.
L, Gate-House, built by Abp. Dunbar, between 1524 and 1547.
M, S. Nicholas' Hospital.
N, Alms House and Trades' Hospital.
O, Darnley's Cottage.

The triangular block of houses between Darnley's Cottage (*supra*, p. 56) on the north and the Wyndheid on the south was known as Isle Toothie.

Of Limmerfield, afterwards Drygait, Lane, M'Ure says: "The Limmerfield Wynd, stretching north from the Drygate to the Castle

Gate is 150 paces in length, and 4 paces in breadth. It hath only one new lodging in it. In this piece of ground stands *the Guard House*, to Guard the north end of the City, divided in two Rooms—one for the Officers, another for the Soldiers, and well benched round." Law refers to the sentries about the Wyndhead. *Memorialls*, p. 219; cf. *ib.* p. 129. The Limmerfield is also mentioned by Francis Sempill:

> "So they a glass of claret took,
> Might make a guarder pawn his cloak;
> Then they three limmers in a spoak,
> Bad Limmerfield adieu."
> *The Poems of Mr. Sempill of Beltrees*, p. lxxii.

John Dunlop of Garnkirk, burgess and bailie of Glasgow, a well-to-do merchant and banker, had his house in the Limmerfield, in the first half of the seventeenth century; Mitchell, *Old Glasgow Essays*, pp. 287, 338, 342; and we know, on the unimpeachable testimony of Bailie Nicol Jarvie, that "Mattie was nae ordinary lassock-quean; she was akin to the Laird o' Limmerfield."

The lands of Limmerfield, extending from the Wynd to the burn Malindinor, were purchased by the Merchants' House of Glasgow. *Companion to the Necropolis*, p. 8; Blair, *Biographic and Descriptive Sketches of Glasgow Necropolis*, p. 25; Hill, *View of the Merchants' House*, p. 44. *The Regality Club*, Third Series, pp. 49, 58, 77, 78.

William Cunningham of Craigends, making a journey to Edinburgh in 1675, notes amongst his payments in Glasgow: "To the Almshouse and beggars on the way." *Diary*, p. 60 (Scottish History Society).

The above Plan is an adaptation of one prepared by Mr. James C. Roger, F.S.A., who for several years resided at Govan.

CHAPTER III

THE BURGH TERRITORY

ALTHOUGH the cluster of homesteads which for many centuries constituted the city of Glasgow was insignificant, it was, as a burgh, as extensive as in our day.[1] The territory or liberty[2] of the burgh,—the clearance, laboriously won by the original settlers from the forest,—stretched, then as now, from Hamilton Hill[3] upon the west to Camlachie burn upon the east, from the Clyde upon the south to Possil upon the north; two miles and a half in breadth, and a trifle less in length, comprising an area of 1768 acres. The land to the north of the Stable-Green Port,—say, for reference, the Royal Infirmary—what may be referred to as the St. Rollox district,[4] was a common,[1] known as the Easter Common, while stretching westwards to Hamilton Hill was the Wester Common. To the east of the Cross—the *crux foralis* —and the burn Malindinor was another extensive common, the Gallowmure, stretching from the Butts—properly the Muir Butts[2]—and Claythorn, that is from Hunter Street or near the site of the old Barracks, for a mile eastwards, to the Camlachie Burn,[3] and lying between Carntyne Lone, now East Duke Street, which separated it from the extra-burghal lands of Easter and Wester Craigs (the property of the Subdeanery

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[1] This, of course, is keeping out of view extensions made by Act of Parliament and other additions to the municipal area.

[2] Craig explains the "territorium burgi" as being "quod nos libertatem burgi dicimus." Craig, *Jus Feudale*, i. 10, § 31.

[3] A quarry at Hamilton Hill was at one time famous for its grindstones. *Old Statistical Account*, ix. p. 7.

[4] The topographical reference is convenient, but the chapel and churchyard of St. Roche occupied a very small portion of the land in question. Messrs. Charles Tennant & Company's works, which have made the name prominent, do not occupy any part of the Chapel

lands, but are built on Limehouse Bog immediately to the north of the churchyard and chapel.

The site was described in 1786 as "most agreeably situate near the High Kirk of Glasgow," and on it "the chimes and all the clocks of Glasgow are most distinctly heard." *Glasgow Mercury*, 23 November, 1786. See *ib.* 28 July, 1785.

[1] What is now known as Castle Street was described in 1552 as "the street which leads out from the North Port to the muirs." Renwick, *Protocols*, No. 122. Plan, p. 77.

[2] The *Muyr Buttis* (Map, p. 76) were, prior to 1559, the eastern boundary of the University property. *Munimenta Universitatis Glasguensis*, i. p. 67. The Butts were presented by the City to the University in 1760, to prevent injury to the Observatory lately erected. *Act of Council*, 27 March, 1760. *Glasgow Journal*, 22 August, 1757.

Pagan states, *Relics of Ancient Architecture in Glasgow*, p. 2, Glasgow 1849, fol., that Ladywell Street, as we used to know it, stood on part of "The Butts." In more modern times the locality was known as the "Hangman's Brae." Cleland, *Annals*, i. p. 38, n. (Plan, p. 76). The gallows stood on the Gallowmure. *Glasgow Past and Present*, ii. p. 490. Till nearly the end of the eighteenth century Ladywell Street and Gallowgait formed the only means of approach to the city from the east. "Passage leading from the old Gallowgate Toll-to the Butts." *Glasgow Mercury*, 16 April, 1778.

[3] See Brown, *History of Glasgow*, ii. p. 94.

of Glasgow)[1] on the north, and Barrowfield (properly Burrowfield), which belonged to the bishop and was also extra-burghal,[2] upon the south, while the old Camlachie Lone,[3] now Easter Gallowgait, parted it into two divisions, Over and Nether or Heigh and Laigh.

To the south of Calton—originally Blackfaulds[4]—which is entirely extra-burghal, were various crofts or

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[1] Eight acres of the Gallowmure bounded on the north by the lands of the Subdean of Glasgow, commonly called "The Wester Craiggis," 1529. *Liber Collegii N.D.* p. 132, cf. p. 24; *Glasgow Past and Present*, ii. p. 490. In 1575 John Crawfurde in Wester Craigis was prosecuted for casting turf on the town's common, he being an unfreeman and dwelling on another lord's ground. *Burgh Records*, 1 June, 1574; 14 June, 1575. The Wester Craigs are now part of the Necropolis.

[2] See Sasine John Walkinshaw, merchant burgess of Glasgow in the 40s. land of old extent of Burrowfield. Registered 25 January, 1663. *P. R. Renfrew and Glasgow*, p. 87. Advertised:—To be feued, *Caledonian Mercury*, 23 May, 1723; To be sold, *Glasgow Mercury*, 21 April, 1785; 13 June, 1787.

[3] More accurately, "the Eist lone that passes fra Litill St. Mongois Kirk to Camlachie Brig." *Burgh Minutes*, 9 June, 1590. Gallowgait proper extended no further eastwards than the East Port, at the Great Dowhill.

[4] Called Fauld in 1622. Sasine John Rodger, merchant burgess of Glasgow, and Jonet Drew, daughter of William Drew, merchant burgess of Glasgow, and Marion Lowk, his wife, in implement of Contract of Marriage in 6 roods of the 40s. land of Borrowfield, lying contigue in that part called The Fauld. Registered 22 January, 1622. *P. R. Renfrew and Glasgow*, i. p. 9. In 1691 we have "4½ acres of land lying in that part called Fauld." *Inquisitionum Retornatarum Abbreviatio*, Lanark, No. 395. The main street is on the Goosefauld.

The villages of Old and New Calton, embracing 53½ acres, parts of the barony of Barrowfield, were erected into a burgh of barony in 1817. In 1819 an Act (59 Geo. III. c. iii.) was passed regulating the police of the burgh of Calton and village and lands of Mile-end, which commonfields (*campi*) of arable land, which constitute the present Green. Between Calton and Burrowfield on the north, and the Camlachie Burn or Redclaith Gott on the south, were Blacklands and the runrigs of Cropnesto or Crapnestok (now the Calton Green); between the burn and the Clyde were Broomlands and Kinclaith (partly within and partly without the burgh),[1] Peat Bog,[2] Dassie Green, Susanna Rig, Geburg Meadow, and Linningshaugh, the latter of which, now the site of

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was amended and continued in 1840 (3 and 4 Vict. c. xxviii.); and in 1846 the burgh was absorbed by Glasgow.

A considerable amount of information regarding Calton will be found in the Session Papers in Adam and others *v.* Weavers Incorporation of Glasgow, 1734, Elchies, *Pactum Illicitum*, No. 2; Craigie, *Session Papers*, vols. viii. and x.; and also in the Session Papers and in the report of the case Burt *v.* Home, 12 January, 1878, 5 *R.* 445.

[1] "The field or croft (*campus*) of Kyncleth in the Brumelands," 1512. *Diocesan Registers*, ii. p. 508.

The east half of Broomlands, between Barrowfield on the east and north and Provosthaugh on the south, the half of Parson's lands; 8 acres and 10 roods in Kinclaith; Red Cloth Gott; Provosthaugh lying between Barrowfield and Parson Lands of Glasgow on the north, Dassie Green partly on the west, and Clyde on the east and south, together with a rig or rood of land used as a road to and from Provosthaugh, were added to the royalty by Act 39 and 40 Geo. III. c. 88 (30 June, 1800).

Redcloth or Redclaith Gott is referred to above as an area of land, and in 1691 we have "the meadow called Reidclothgott." *Inquis. Retorn. Abbreviatio*, No. 396; but it was also an alternative name of the Camlachie burn.

With Kinclaith and Redclaith compare Alde Clothi, rendered *rivulus petrosus*. *Collections for the Shires of Aberdeen and Banff*, p. 172.

[2] *Supra*, pp. 63, 73. As to the Peat Bog in modern times, see John Eadie, *The Reign of George Third . . . The Clyde . . . and other poems*, pp. 85-90, Glasgow 1818, 8vo.

the Justiciary Court-house, was bounded on the west by the burn Malindinor. To the south of Camlachie Lone (now East Gallowgait), and immediately to the west of Calton, was a little corner known as the How Croft—the land now lying between Calton Mouth and Calton Entry. To the west of this, extending westwards to St. Mungo's Lane or Burnt Barns and from Camlachie Lone on the north, to Crapnestock or Craignestock Road (now Great Hamilton Street) on the south, was the Round Croft, about two acres and a half in extent. Between St. Mungo's Lane on the east and the Malindinor on the west, and to the south of Gallowgait, was Eaglesham's Croft,[1] including the lands of Merkdailly[2] and the Willie or Willow Acre.[3] Turning westwards beyond the

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[1] Sasine, 7 June, 1611. Archibald Heygate, *Protocol*, f. 216. In 1536 it is called Egglystanes Croft. Renwick, *Protocols*, No. 1233.

[2] There is a Merkadale at Carbost in Skye.

[3] Renwick, *Protocols*, No. 959. The croft included what is now St. Andrew's Square.

Immediately east of Eaglesham's croft, beyond the Malindinor, was the South Port or Nether Barres Yett, an erection of masonry. (*Burgh Records*, 14 Sept., 2 Nov. 1644.) On the site there afterwards stood a large land of houses to the south of Steel Street. Letter by "C." (Andrew Cunninghame, Keeper of the Burgh Register of Sasines, afterwards Town Clerk Depute), *Glasgow Herald*, 15 September, 1859.

The word *barres* probably refers to some barrier or defensive work at the gate. As it was in the neighbourhood of the original Mutehill and the Butts or Exercise Ground (the *palaestra* of the records *infra*), and as trial by combat was a recognized form of judicial procedure in burghs, it is possible that the term had reference to the bounds or lists for combatants. But keeping in view that the Gallowgait Port was known as the East Barresyet (Renwick, *Protocols*, No. 1112) the former is the more probable explanation of the name. Robert Mitchell suggests (*Transactions of*

Malindinor, that is from a little way east of the line of the Saltmercat, and to the south of the Briggait, were the Little Green or Laigh Green,[1] the Greenheid (*Caput Viridarii*) and Goosedubs[2] extending together to the Stockwell. To the west of these again, until it met the Glasgow—now the St. Enoch—Burn (*i.e.* according to modern topography between Rope Work Lane—formerly Rope Work Entry—and Jamaica Street), lay the original, or Old, or Meikle Green of Glasgow[3]

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the Archaeological Society of Glasgow, i. p. 423) Burgh's gate as the etymology. There was a Barresyet in Stirling; and the name occurs in a curious description of land at Balmanno, regality of Abernethy and county of Perth in 1579. *R.M.S.* 1580-93, No. 223.

[1] The Green is mentioned in 1487 as the southern boundary of Mutland Croft. *Liber Collegii N.D.* p. 200; *Munimenta Universitatis Glasguensis*, i. p. 35.

The Green originally extended from the burn Malindinor on the east to Glasgow or St. Enoch burn on the west, roughly from near St. Andrew's Episcopal chapel to Jamaica Street. The Custom-House is on the site of the Green, near its western extremity. The Briggait was originally a path or road running west from the South Port to the Ford over the Clyde, and to the Fishergait or Stockwell, having the Muthill Croft on its north and the Green on its south side. The building of the Briggait split up the Green into (1) the Little Green on the east, (2) the Greenheid and Goosedubs eastwards of the Stockwell, and (3) the Meikle Green between the Stockwell and Glasgow burn.

[2] *Burgh Records*, 1663-90, p. 140. The Common Myre (*maresia*) of Edinburgh was commonly known as The Goose-dubs.

[3] "An acre of land lying in the croft of St. Tenew, between the lands of the chaplainry of St. Tenew on the east, the burn called Glasgow on the west, the Common Green on the south, and the cemetery of St. Tenew on the north." Renwick, *Protocols*, No. 87 a; cf. Nos. 100, 132 b, 363, 416. "The baillies ordanes the maister of work to repair the brig at St. Tinewis well besyde the Greyn to

(*Commune Viridarium*), where the waponschaws were held, and on which were the *Palaestra lusoria de Glasgw*,[1] it may be, the Butts. On both sides of Trongait—

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be ane futte rod (*i.e.* a foot road) in time cumyng." *Burgh Minute*, 13 June, 1595.

In M‘Ure's time (1736) the Ropework was within the Green, and the Glass Work at the end. *A View of the City of Glasgow*, p. 121, ed. Macvean. June 3, 1802. "To be rouped that part of the City property, known as the Old Green or Ropework Green."

[1] See Sasine John Brounesyde, 16 January, $15\frac{58}{59}$, William Hegait, Protocol ii. fo. 94. Renwick, *Protocols*, No. 469. Sasine William Trumble, 22 January, $15\frac{60}{61}$, Henry Gibsone, Protocol i. fo. 55. Renwick, *Protocols*, No. 1403. After the sale of the Mylndam the yearly meeting of the burgesses which used to be held there was appointed to take place "betuix the Buttis of the Grene." *Burgh Records*, 4 June, 1590. This was the place at which waponschaws were held. *Ib.* 11 October, 1575.

Palaestra lusoria may therefore mean "Exercise Ground." It might mean "Recreation Ground," or in a narrower sense "Wrestling Ground" (*palaestrare* = to wrestle), but football, golf, and other unprofitable sports were forbidden by Statute, and wrestling was not a popular pastime. In 1552 James Henderson offered to provide a "Pastyme ground" for the indwellers of Edinburgh. He asked for a grant of land "with ane penny of ilk hand bow, corsbow and culvering, bowlis and wther pastymes." (*Burgh Records of Edinburgh*, 1528-57, p. 172.) Shooting with bow or gun was therefore the pastime he had chiefly in view, and if *Palaestra lusoria* means "Recreation" or "Pastime" ground, it may be that, as in Edinburgh, archery was the principal pastime, and that the Butts of the Green were archery butts.

Aberdeen had its "Playfield" on the west side of the Woolmanhill "quhair comedies were wont to be actit of auld." Joseph Robertson, *The Book of Bon Accord*, pp. 138, 235. This was the common meaning of the word. See Sir David Lyndsay's "Auld Man and his Wife," *Works*, ii. p. 316. Stirling also had its "Playfield."

The principal Butts for archery were on the Gallowmure, and were there prior to 1559. *Munimenta Universitatis Glasguensis*, i. p. 67;

anciently the Troyne gait, and formerly Sanct Tenew's or Sanct Tenach's gait[1]—were long stretches of croftland. On the south side between the yards behind the houses in the Saltmercat and Stockwellgait respectively—roughly, from a little to the east of King Street to Old Wynd—was the Muthill or Muteland Croft, abutting on the Briggait (*via que ducit ad Pontem Clude Glasguensem*)[2] and the Goosedubs on the south; to the west of the Stockwellgait, running down to the Old or Meikle Green and stretching to the St. Enoch or Glasgow Burn (about Jamaica Street) on the west, was Sanct Tenew's or St. Enoch's Croft. Beyond St. Enoch's Croft and Burn,

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and in 1625. *Ib. Burgh Records*, 21 May, 1625. These were known as the "Muir Butts."

Butts at one time stood to the east of the present Dundas Street near the line of Cathedral Street, at the Trumpling or Crackling House Brae. *Burgh Minute*, 17 July, 1684; cf. *ib.* 23 July, 1679. In 1612 the nolt market was appointed to be held upon the north side of the burgh in the common lones "quhilkis meitis togiddir at that part callit the Buttis, and commounlie callit the Kow Lone." *Burgh Minute*, 25 July, 1612. This seems to be the same place and not the Back Cow Lone, now Ingram Street, as has been suggested. If so, the name Cow Lone (pp. 87, 133) was given not only to the present Queen Street, but also to its continuation northwards towards Cowcaddens.

The Butts of the Green are referred to (1590) as "the Buttis of the Greenheid." *Extracts from the Burgh Records*, 1663-90, p. 534.

[1] Otherwise "the gait extending from the Cross to Sanct Tanew's chapel." *Munimenta Universitatis Glasguensis*, i. p. 35. It was divided into two parts—"within the Port" (*infra Portam*) and "beyond the Port" (*citra Portam*). *Ib.* p. 50. This was the "West Port." In 1588 it was removed westwards to the Stockwellheid. *Burgh Minutes*, 28 December, 1588; 14 March, $158\frac{8}{9}$; 24 October, 1640.

[2] *Liber Collegii N.D.* pp. 41, 87. The Green lay to the south of St. Tenew's Croft, and extended westwards to the Glasgow, now St. Enoch, Burn. Cf. Renwick, *Protocols*, Nos. 41, 2253-54.

and from the Clyde on the south to Drummodir Hill[1] Lone (afterwards the Westergait, then Anderston Walk, now Argyle Street[2]) on the north, lay Broomielaw Croft, extending to the Anderston Burn,[3] near Stobcross—or a little to the west of M'Alpine Street, to suit modern land marks—the limit of the burgh at this point. On the north side of Sanct Tenew's gait, now Trongait and Argyle Street, the Langcroft extended from the back of the gardens attached to the houses in High Street westwards to the Common Lone or Vennel, afterwards the Cow Lone, now Queen Street.[4] To the west of the Langcroft up to St. Enoch Burn, and to the south of the lands of Meadowflat, was the Palyhard, Palzard, Pailzeoune or Pavillioune Croft.[1] The northern boundary of the Langcroft was a common lone, afterwards known as the Back Cow Lone,[2] the modern Ingram Street. Between this Lone and the line of George Street were the lands of Ramshorn, extending westwards to the Cow Lone (that is, the line of Queen Street), while beyond this, and extending to St. Enoch or Glasgow Burn (that is, about West Nile Street), and from the north line of Exchange Square and Gordon Street on the south to nearly Sauchiehall Street on the north, were the lands of Meadowflat. The steep slopes which rise from George Street—Deanside Brae and Cribbs Croft—were occupied as gardens and enclosures,[1] and joined with the gardens and houses of the Rottenrow, which lined the summit of the hill.[2] Meadowflat and Ramshorn[3] were, however, *extra burgum*, so that between Ingram Street and George Street a curious "gushet" of non-burghal land was let into the burgh territory.[4] Both the Royal Exchange and the Municipal Buildings are built upon these lands, and are thus outwith the burgh of Glasgow, although they are within the extended royalty.[5] A like inroad is made by the lands of Broomhill and Cowcaddens, which wedge themselves in between the north slope of Rottenrow and the southern limit of Wester Common;

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[1] Drummodir? = Druim odher, grey ridge. Called Drummothar Hill. *Glasgow Mercury*, 5 May, 1785; *Burgh Records*, 14 Sept. 1652.

[2] When modern names were given, Trongait applied to the street from the Cross to the West Port, which was latterly at the Stockwell, but originally further east. Argyle Street extended thence to Jamaica Street. In the end of the eighteenth century the street leading west from the head of Jamaica Street was known as the Westergait. In the early part of the nineteenth century it became Anderston Walk, and latterly Argyle Street. The part to the west of the burgh boundary was also known as Partick Lone.

[3] To the north of the Broomielaw croft and west of the Glasgow Burn, but extra burghal, was the Cuninglaw. *R.M.S.* 1580-93, No. 509.

The Anderston or Greenhill Burn comes from Garnet Hill, crosses Holland Street, passes between the Glasgow Academy, now the High School, and the consulting rooms of the Hospital for Skin Diseases, and then passes down Elmbank Street. It crosses Bishop Street, through Taylor's Timber Yard, between Pitt Street and Bishop Street, and next crosses Argyle Street. It was the boundary between the burgh and Rankinshaugh. It is now intercepted at St. Vincent Street, and runs into the sewer in that street. (Information supplied to me in 1885 by the late Mr. John Carrick, Master of Works.)

[4] In 1530 simply the Lonyng. *Munimenta Universitatis Glasguensis*, i. p. 50.

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[1] "A ryge lyand in the Palyhard croft," 1450. *Liber Collegii N.D.* p. 177. "A rige of land lyand in the Palyarde croft," 1485. *Ib.* p. 196. Five roods of arable land (*terra campestris*) in Palyartcroft, near the chapel of St. Thanew, 1487. *Munimenta Universitatis Glasguensis*, i. p. 35. *Liber Collegii N.D.* pp. 201, 256. Two roods of land in the Palyarde croft in St. Tanew's gait, 1496. *Registrum Episcopatus Glasguensis*, ii. p. 493.

In 1561 it is "Palzonecroft." Sasine 1 September, 1561, Thomas Heriot. Henry Gibson, *Protocol*, f. 60. In 1588 it is called "Pauilzeoune Croft" and "Pauilliaun Croft." Sasine Fleming, 25th May, 1588. Archibald Heygait, *Protocol*, f. 72.

In 1550 Adam Summer was infeft in "five roods or rigs of land in the Pavillioun Croft, between the lands of John Wan on the west, a vennel called the Lone on the east, the lands of Medowflat on the north, and a kilsteid on the south." Renwick, *Protocols*, No. 35; cf. No. 43. In 1600 we have Pallonecroft, *Munimenta*, i. p. 156.

Palyard or pallyard was an old name for a vagabond, one who sleeps on the straw in barns and outhouses, a scoundrel. But in this case the name is probably = Pal-yhard or Pal-yard. See *Liber Collegii N.D.* p. 177. As to Pailzeoune, see *infra*, c. x.

Palacium in mediaeval Latin means a palisade or set of palings. The *campi*, crofts or fields of the old days, were open, not fenced; and it is possible that this croft was an exception, and hence the name.

M'Ure describes the Old Green as "only fenced round with *palisadoes.*" *View of the City of Glasgow*, p. 121, ed. Macvean.

[2] Its eastern part was Ranald's Wynd or Vennel.

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[1] "Hortus Malcomi Renaldi jacens super le Denesyde," 1494. *Registrum Episcopatus Glasguensis*, ii. 487. Several gardens on Deanside are mentioned. *Munimenta Universitatis Glasguensis*, i. p. 29.

[2] In 1778 Thomas Falconer's tenement at the west end of Rottenrow and on the south side of the street, with 12 falls (456 square yards) of garden ground belonging to it, was advertised for sale. "The house," it is said, "is pleasantly situated, looking down upon all the gardens towards the Candleriggs." *Glasgow Mercury*, 5th March, 1778, and other dates.

[3] "Terrae Domini Episcopi Glasguensis que appellantur Rammyshorne." *Liber Collegii N.D.* p. 258.

[4] The eastern boundary of Ramshorn was the Greyfriars Monastery (*Diocesan Registers*, ii. p. 435), within the walls of which lay the Craigmak or Craignaucht, where annually the peace of the Fair was proclaimed. Renwick, *Protocols*, No. 2291. *Infra*, c. xiv.

By the first Act for the extension of the royalty (39 and 40 Geo. III. c. 88, 30 June, 1800), the royalty was extended over the 33s. 4d. land of old extent of Ramshorn and Meadowflatt, *annexis connexis*, and the ground called Cribbs Croft; but (§ 7) the tenure of the lands was not changed, that is, they continued to be held feu, and did not become burgage.

[5] See *Report of the Committee on the proposed Exchange Buildings. With*

lithographed illustrations. Glasgow 1827, 8vo; *Scots Mechanics Magazine*, p. 240, Glasgow 1825, 8vo; *Scots Times*, 19 May, 9 June, 1827. The Exchange was then at the Cross, but it was admittedly desirable that it should be removed to another site. The Report deals with several sites, but recommends that which was ultimately selected, on the west side of Queen Street. There was a strong feeling at the time that not only should the Exchange not be removed to the extreme limit of the royalty, but that it should not be taken outside of the burgh. After the erection of the Justiciary Buildings at the foot of the Saltmarket, Mr. David Laurie suggested that the Exchange should be built a little to the west, fronting Briggait on the north and the Stockwell on the west. *Hints respecting the formation of a New Royal Exchange within the City of Glasgow*, Glasgow 1814, 8vo.

When the present Municipal Buildings were erected in 1883 the site, though still beyond the burgh, was far within the bounds of the royalty as it then stood; but in 1829 it had been proposed to transfer the public offices to St. George's church, which was then on the very western edge of the royalty. These offices were originally at the Cross, but when the Justiciary Buildings were erected on the Skinners' Green, at the foot of the extension of the Saltmarket, they had been removed to those buildings in 1814. As against the St. George's church scheme it was proposed to bring them back to the Cross. The St. George's church proposal met with strong opposition, and was dropped. Both proposals gave rise to a considerable literature. See amongst others *Letter to the . . . Lord Provost . . . against Dr. Cleland's suggestion for the conversion of St. George's church to Public Offices, etc., etc.* By David Mathie, Glasgow 1829, 8vo. *Remarks on the necessity and expediency of restoring the Burgh Courts aud Public Offices . . . to their original site at the Cross.* By Spectator, *ib.* 1829, 8vo. *Interim Report by the special committee of the Petitioners . . . for the restoration of the Public Offices to the Cross. Ib.* [1829] 8vo. *Final Report of the committee for the restoration of the Public Offices to the Cross. Ib.* [1830] 8vo. *Letter to the . . . Provost, Magistrates and Council . . . on the subject of the projected new Public Offices.* By Robert Stewart [wine merchant, Old Post Office so that the land from the corner of the North Road, or Parliamentary Road as it is now called, and Buchanan Street to the corner of West Graham Street, and Cowcaddens Road or Street, is outside the burgh.[1] The burgh lands, however, begin again at this point, and stretch north to Keppoch Row[2] and north-west to near Napiershall.[3]

Court, d. 1837], Glasgow [1835], 8vo. *Glasgow Free Press*, 21 March, 1829; *Scots Times*, 21 November, 5 December, 1829; *Glasgow Courier*, 4 July, 12 September, 1829.

The public offices were ultimately transferred to Hutcheson Street.

The office of the Burgh Register of Sasines is now outside of the burgh, and the question has been mooted whether registration made outside the burgh is due registration.

[1] Cowcaddens (anciently Kowcaldennis or Cowcaldanys) and the adjoining lands were, by the Glasgow Police Act of 1843 (6 and 7 Vict. c. 99), added to the extended royalty in that year, their tenure remaining feu as before.

On Blaeu's map Cowcaddens is spelt Gucades: and the burn Malindinor appears as Polindi B. These and many others are, no doubt, mistakes of the engraver.

[2] "October, 1670. There was a divill that troubled a house in Keppoch, within a mile of Glasgow, for the matter of eight days tyme, (but disappeared again) in casting pits, and droping stones from the roof, yet not hurting any, lyke that which appeared in the west, in a weaver's house, a good man, about 14 yeirs agoe, which did the lyke, and spoke to them audibly." [The Glenluce case] Law, *Memorialls*, p. 33.

[3] The irregular contour of the burgh was a great convenience to debtors in fear of apprehension under an Act of Warding. All they had to do was to slip beyond the boundary at one of the numerous points at which it was invaded by non-burghal land, and the burgh officer could do nothing. In times not long past, the shops along the one side of Argyle Street to the west of Jamaica Street were closed, and those on the other side were open on the Sacramental Fast-days, the south side of the street being in the burgh and the north side in the barony, a different parish.

CHAPTER IV

PRIVATE PROPERTY AND THE COMMON GOOD

THE burgh of Paisley was within the demesne of the Abbot and Convent of Paisley, and, like Glasgow, was first a burgh of barony and then a burgh of regality;[1] and like Glasgow, was for many centuries principally an agricultural community.[2]

At the present day the territory of the burgh of Paisley consists of (1) *terra burgalis*, (2) *terra campestris*, (3) common land (*terra communis*), and (4) moss lands.[3] The moss lands are a specialty arising from the situation of Paisley, but the other terms were well known, a few generations ago, in every burgh in the country, although they have now fallen into disuse along with the division which they indicate.

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[1] Paisley was a burgh of barony, and then of regality, formerly holding of the abbey of Paisley, latterly of the Crown. It only became a royal burgh in 1833. See Paisley *v.* Freeholders of Renfrewshire, 17 January, 1793, *M.* 1833.

[2] Metcalfe, *Charters and Documents of Paisley*, p. civ.

[3] Chalmers *v.* Magistrates of Paisley, 9 June, 1829, 7 *S.* 718, and the Session Papers; Hector, *Judicial Records of Renfrewshire*, Second Series, pp. 227-245; Wilson, *Agriculture of Renfrewshire*, p. 56; Laurence Hill, *Huchesoniana*, p. 15.

A custom something similar to booking in Paisley prevailed in Lauder. See Hope, *Minor Practicks*, ed. Spotiswood, p. 325.

All burgage property always has been, and still is, either *res universitatis* or *res singulorum*, either community or private property. The former comprises the property which the burgh holds for the common good, and which it administers for behoof of the inhabitants, strictly of the burgesses.[1] The latter is the portion of the burgh territory held in property by the burgesses, originally, of the burgh (*communitas villae*);[2] but, after the development of tenure, held nominally of the bishop, and latterly, when Glasgow became a royal burgh, of the Sovereign as superior.[3] The ownership of a toft in the burgh carried with it the right to enjoy, along with the other burgesses, certain rights in the common property—the common easements in the territory of

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[1] Thus in 1446 Sir Richard Gardner, vicar of Colmonell and keeper of the lights around the tomb of St. Kentigern, acknowledged to have received "a providis viris ballivis, burgensibus et communitate burgi et civitatis de Glasgua" two stones of wax, which were to be paid yearly for said lights, in consideration of leave given by the bishop and chapter for the erection of a mill on the south part of Gardyngad upon the north side of the burn Malyndonar "infra commune dicti burgi ad respectivos burgenses et communitatem pertinens," Laurence Hill, *Archium Glascuense*, p. 5 [Glasgow] 1856, 8vo. Marwick, *Charters of Glasgow*, i. pt. 2, p. 26.

Although the burgesses are entitled to the use of a commonty belonging to a burgh, the property is vested in the burgh and the administration of it is in the magistrates for the benefit of the burgesses. Magistrates of Lauder *v.* Spence, 17 May, 1821, 1 *S.* 17.

[2] *Fragmenta Collecta*, c. 3.

[3] In 1283 a burgage in the Rottenrow is granted to be held of the bishop, *Registrum de Passelet*, p. 382; but the explanation seems to be that the bishop had conveyed that same burgage to the transferror. *Ib.* p. 385.

In 1505 the Abbot and Convent of Paisley convey a tenement in the Stockwell, containing one burgh rood, to be held of them in feu the burgh of Glasgow in wood and water, in pasturage and tillage.[1]

The common property of the burgh consisted of tillage land and pasture land or waste.[2] The former was apportioned amongst the burgesses. The latter was enjoyed by them in common; and as common property it was placed at the disposition of the wayfarer for the use of his travelling cattle. "None shall trouble one travelling with horse or cows or the like, if he pasture his beasts outwith meadow and standing corn."[3]

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farm for payment of 5 shillings yearly. *Ib.* p. 433. See Renwick, *Protocols*, Nos. 1924, 1998, 2259, 2266, 2296.

Erskine states (*Institute* 2, 4, 8) that when a burgh of regality or burgh of barony was erected into a royal burgh, without taking the consent of the superior, his rights were not affected, and the burgesses continued to hold of the subject superior, and not of the Crown.

In the case of Glasgow the regality ultimately passed to the Crown, so that the mid-superiority was extinguished, or is at least dormant.

[1] *Registrum Episcopatus Glasguensis*, i. p. 37; cf. *Liber Collegii N.D.* p. 249.

So much was the idea of common property associated with that of a burgh, that when Viscount Kilsyth feued out the town of Kilsyth, in 1679, he appropriated the lands of Barrwood, extending to upwards of 170 acres, as the common property of the feuars, to be held by them in commonty as a pertinent of their feus on the latter of which they were to erect houses.

[2] By the Custumal of Preston the burgesses had common pasture everywhere in the borough except in cornfields, meadows and hayes. Harland, *Mamecestre*, i. p. 185; Dobson and Harland, *History of Preston Guild*, p. 77; *English Historical Review*, xv. pp. 499, 510. As to Salford, see Harland, *ut supra*, p. 201.

The whole burgesses of the Canongate were entitled to have faill, clay and divot from the Gallowley, the common land of the burgh. Register of the burgh of the Canongate, 13 January, 1588. *Miscellany of the Maitland Club*, ii. p. 356.

[3] *Registrum Episcopatus Glasguensis*, ii. p. 608; *Constitutiones noue*, c. 3; *Ancient Laws and Customs*, p. 98.

CHAPTER V

TERRA BURGALIS

FROM the earliest date to which documentary evidence extends, houses and gardens within the burgh were held as private property,[1] and, as we have seen, possession in property of a rood (*perticata*)[2] of the burgh land was an essential of burgess-ship. The house and garden ground of the burgess is properly *terra burgalis*, *tenementa burgalia*, *burgagium*, the 'biggit land,'[3] and this was co-extensive

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[1] Tacitus records this of the Germans: Suam quisque domum spatio circumdat. *Germania*, c. 16.

[2] "Terra sive tenementum jacens in burgo et civitate Glasguensi prope vicum vocatum le Stokwell in se continens unam rodam terre burgalis," 1505. *Registrum de Passelet*, p. 433.

Perticata = rodded land, *i.e.* land laid off by the *pertica*, the perch or rod. "Una perticata terre [in vico de Covgate s. Cobgate in burgo de Aberbrothoc] que spectat ad officium communitatis nostre," 1305. *Registrum vetus de Aberbrothoc*, pp. 277, 302.

[3] "*Terra hospitata*," "*terra aedificata*"; cf. *Liber Collegii N.D.* p. 250. In a charter, *circa* 1210, by Walter the Steward to the Abbey of Paisley, he granted certain land in Renfrew "ad habitandum et edificandum in burggagium." *Registrum de Passelet*, p. 18.

The memory of the old word 'terra' is still preserved in the common expression "a land of houses." *Terra inhospitata sive vasta* "groonde remanande wast and unhabit, and not strenzeable." *Registrum Episcopatus* with, what we would now-a-days speak of as, the town proper, the residential and business district, a very limited area, as already stated, in early Glasgow. Such a possession is referred to in old deeds as '*mansio*' or '*mansura*,' a 'toft,' a 'tenement.'[1] The building is referred to as *manerium*.[2] It was a condition of ownership that the land should be built upon. When one was made a burgess in respect of waste land (*terra vasta*) and had no 'byggit' or 'herberyt' land,[3] he was allowed a year to build. If thereafter it was laid waste by fire or war and

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Glasguensis, ii. p. 459. As to *terra hospitata*, *inhospitata*, *vasta*, see Savigny, *Roman Law in the Middle Ages*, translated by Cathcart, p. lix.

[1] "Una mansura in burgo de Edinburgh." *Liber de Dunfermelyn*, p. 1; "unum toftum." *Ib.* p. 27. Tofta seu mansio, 1605, *Inquisitionum Retornatarum Abbreviatio*, Lanark, No. 34.

In 1180 William Gleyn had a plenary or complete toft in the burgh of Glasgow, with one net's fishing in Clyde. *Registrum Episcopatus Glasguensis*, i. 37. The Abbot and Convent of Melrose had gift of a toft in Glasgow from Bishop Jocelin. *Liber de Melros*, p. 36.

The size of the toft varied. In 1320 the Abbey of Arbroath owned a plenary toft in Aberdeen which consisted of two roods (*perticatae*) towards the Castle and two roods in the street on the east side of the church of St. Nicholas. *Registrum vetus de Aberbrothoc*, pp. 303, 325.

A toft in England it has been said is not a close, but ground whereon a house formerly stood. Skidmore *v.* Boncheir, 31 and 32 Car. ii. 2 *Shower*, p. 93.

Terra is used as descriptive of a holding in severalty. *Toftum* is a technical, *terra* a popular word. *Terra* is equally vague as regards actual extent: "Terra continens quinque perticatas; . . . alia continens duas perticatas cum dimedia." *Registrum Ecclesie S. Egidii*, p. 114.

[2] "Illa pecia terre in qua *manerium* nostrum constructum esse solebat in tofto nostro de Perth," *Registrum nigrum de Aberbrothoc*, p. 7: "*Manerium* nostrum cum transitu eiusdem qui dicitur *le Venel*," *Registrum Ecclesie S. Egidii*, p. 108. *Mansio* sive *manerium*. *Liber Collegii N.D.* p. 238.

[3] *Herbergare* = to build. Cf. *Liber Cartarum Sancte Crucis*, p. 6.

he held other 'byggit' land, he could leave the former unbuilt until, in the case of a royal burgh, he had ease to build, provided the king's ferme was duly paid in the meantime.[1] In Glasgow, as we first know it, tenure in the technical sense of the term was unknown. It gradually grew up here, as it did elsewhere throughout Scotland, and the burgh land came, as has been explained, to be held by burgage tenure.

The *terra burgalis* gave the burgess his qualification, and this he held in severalty as his own property. As a burgess he was entitled to the use of a certain portion of the *terra campestris*[2] and *terra communis*; of the former for agricultural purposes, originally, it may be, in runrig for a fixed period, the specific portions regularly shifting;[3] of the latter, in common with the other burgesses, for grazing purposes, for a specified number of sheep, cattle or horses, and for obtaining fuel.

The burgh tenement was not a bare dwelling or 'housestead,' but behind the house (*ex parte posteriori adhaerens*)[4] stretched the remainder of the rig or rood of land (*perticata terrae*), technically styled its *cauda*, tail or tailbut,[5] the whole forming the old burgess qualification of the Burgh Laws. The houses on both sides of Rottenrow had long gardens or orchards attached to them, enclosed by hedges.[1] The gardens on the south side of the Drygait ran back to the burn Malindinor. In 1455 Master Patrick Leiche, Chancellor of Glasgow, purchased a house on the east side of High Street, with a 'tail' and garden behind, running down to the Malindinor.[2] The tails remained until a comparatively recent date. Just one hundred and twenty years ago a

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[1] *Leges Burgorum*, c. 27; "Curia Quatuor Burgorum," c. 2; *Acts of the Parliaments of Scotland*, i. p. 703. There are many Acts relating to 'brint' and waste lands; 1555, c. 30, *ib.* ii. p. 489; 1567, art. 65, *ib.* iii. p. 42; 1594, c. 36, *ib.* iv. c. 71.

[2] *Terra campestris* is strictly 'field land' or 'croft land,' that is land in a field or croft (*campus*); generally rendered 'arable land' in the Chartularies. *Infra*, p. 102.

[3] Of this there is no actual proof, see *infra*, p. 124.

[4] *Liber Collegii N.D.* p. 31.

[5] "A tenement with the appurtenance lyand within the said burgh

and cite of Glasgu . . . with the *tayle* strekand to the yhard of Johne of Bracanryggis," 1454. *Liber Collegii N.D.* p. 177. "Cum *cauda* et orto extendente ad rivolum de Mellendinor," 1455. *Registrum Episcopatus Glasguensis*, ii. p. 392. "Cum capite et *cauda* se extendente usque ad torrentem de Malyndenor," 1467. *Munimenta Universitatis Glasguensis*, i. p. 18.

In 1641 the Scots Parliament confirmed a Signature by Charles I. in favour of the Duke of Lennox of *inter alia*, "all and haill the landis and barrony of Glasgow, castle, citie, burghe and regalitie of Glasgow with all landis, boundis and tenementes, housis, biggingis, orchardis, yairdis, *tailles*, killis barnes, brewhousiis &c. and other biggings within the said burgh." *Acts of the Parliaments of Scotland*, v. p. 507.

On 14th November, 1667, William Maxwell let to Gavin Wood, quarrier, burgess of Glasgow, "That his laigh foir houss (conteining hall, chalmer and seller) with y^e ane half of y^e yeard and *tailbut* following theirupon within the west end of the said brughe in the south wall y^{rof}." The rent was £19 Scots, or £1.11.8 Stg. per annum. *Register of Deeds, Commissariot of Glasgow*, 20th September, 1671, vol. xix. p. 265.

In Elgin in 1541 there is a complaint against one "for cassin ane stank upon ane *taill*" belonging to another. *Records of Elgin*, p. 64. In 1550 there was a litigation "anent the heretable right of ane *taill* of land." *Ib.* p. 102. Cf. *ib.* p. 100. *Tail* rigs in the burgh of Linlithgow, 1554-5. Penney, *Linlithgowshire*, p. 154.

[1] *Registrum Episcopatus Glasguensis*, ii. p. 438.

[2] *Registrum Episcopatus Glasguensis*, ii. p. 392.

house with a large garden behind it on the west side of Saltmarket, and another on the north side of the Briggait, were advertised for sale.[1]

Most of the houses in the Stockwellgait and the Trongait had barns attached to them, and nearly every croft along St. Tenew's gait, that is along the present Argyle Street, had its kiln and barn and "steip troch" or malting trough.[2]

There is no record of the number of burgages that there were in Glasgow. As the burgh was a sixteen merk land, this would make the number 512 on the basis of a payment of 5d. per burgage, but this cannot be taken as the figure, as the area, for which the payment was made, included the common land and pasture land, which were not held in individual ownership, and for which a considerable portion of the annual payment must have been due by the community as a whole. It has been suggested that, in some burghs, the apportionment amongst the burgesses was upon the basis of the merk, that is into sixteen parts and an indefinite subdivision of these,[3] but this seems doubtful, and does not help to any definite conclusion. Within the historical period one person often held several normal burgages; but when freedom was dependent upon the ownership of part of the burgh land, and was not obtainable by a payment in money or freedom fine, I am inclined to think that the number of freemen probably did not exceed one or at most two hundred. This on the basis of 4.3 to a household would give a population of from 430 to 860, to which must be added a considerable number of unfreemen.

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[1] 19th April, 1785; 7th November, 1787.

[2] Cf. Renwick, *Protocols*, No. 2344.

[3] In Elgin a certain area of land, within the greischip [grieveship] of the burgh, was divided into "auchenparts" or "auchtane partes"; but there were in fact 64 parts, one of which originally constituted the freeman's qualification. The auchenpart was, however, subdivided into much smaller areas, *e.g.* "a third of ane quartar achenpart," that is a twelfth, and this was equal to one rig. The basis of apportionment was thus area, not value. *Records of Elgin*, pp. 61, 77, 85, 88, 96, 113, 127, 129, 130; *Old Statistical Account*, v. p. 17. The burgages of Liverpool were subdivided into minute parts. Picton, *City of Liverpool*, i. p. 10; Muir and Platt, *History of Municipal Government in Liverpool*, pp. 12, 13, 33, 301.

CHAPTER VI

THE TILLAGE LAND

THE *res universitatis* or "common good" of the burgh comprised the remainder of the burgh territory, the *terra campestris* and *terra communis.* This belonged to the community as a body for the use of the individual burgesses.[1] It was subject to no reserved right, except the *firma burgi* payable, in the case of Glasgow, to the bishop, and it was only in later years that the relation between him and the owning burgesses came to be regarded as tenure.[2] Strictly speaking, however, burgage tenure never constituted a feudal relation. A sum of money might be payable by the burgesses to the Crown in the case of royal burghs, or to a subject-superior in the case of other burghs, but this did not imply dependence or subjection to a lord, it did not create the relation of superior and vassal, although for conveyancing purposes it was so regarded.[1]

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[1] Cf. Coote, *The Romans of Britain*, p. 361.

[2] "Every royal burgh hath its own common good or common lands pertaining thereto, which pertain to the burgh *in communi* and are holden of the King in free burgage, *quoad* the haill body of the town." Hope, *Minor Practicks*, Tit. ix. § 16. The same applied in the case of a burgh of regality or of barony, except that the king was not the immediate superior.

The *terra campestris*, the arable or croft land,[2] the "burgh roods," or "burgh acres," as it is variously styled, was cultivated by the burgesses, the freemen, as distinguished from the unfreemen who had no interest in the burgh property and who did not participate in the privileges of burgesses. In the charter by James VI. of 1611 it is described as "*terrae*, tam lie outfield quam infield, *cultae quam incultae*." This land was divided into fields or crofts (*campi*),[3] which again were split up into long ribbonlike strips, known as "rigs" or "roods," "*aggeres*" or "*perticatae*,"[1] generally grouped

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[1] Burgage lands did not fall into non-entry because, it is said, the community was the vassal. This is a convenient explanation, but it hardly meets the case. There was no non-entry duty or other feudal casualty, because there was no feudal relation.

At the Reformation, when so much church property was escheated to the Crown, burgage property was treated as having become the individual property of the Crown, and was therefore given out by way of feu, of which there are many examples in Glasgow. As the doctrine of burgage tenure was then well established and burgage property was in theory held of the Crown, it might be supposed that the Crown could again give out the escheated burgage to be held by burgage tenure: but the objection probably was, that the Crown could not create a burgage holding in the person of an individual, and could do so only through the community and by a grant to it. See *Burgh Records*, 21 December, 1605.

In Edinburgh, Brown's Square, Chambers' Close, and other properties, although within the burgh, are not held burgage. See Gibson *v*. Forbes, 16th December, 1817, *Fac. Col.* No. 144.

[2] In Aberdeen referred to as "territorium croftorum burgi." *Registrum Episcopatus Aberdonensis*, i. p. 398. Mr. P. J. Anderson in his *Charters of Aberdeen* has given a map showing the conjectural position of the burgh crofts.

[3] *Campus* = field, the open commonable field in England, divided up into strips or acres and apportioned amongst the members of the community. See *Domesday of St. Paul*, p. cxxii; Vinogradoff, *Villainage*

in England, p. 277. "Ane akyr of *field land* with the pertinentis lyand on the northt sid the said burgh" [Dunfermline]. Sasine, 1490. *Reliquae antiquae Scoticae*, p. 48, Edinburgh 1848, 8vo. During the Commonwealth, when the Retours were written in English instead of Latin, "field land" was the ordinary rendering of *terra campestris*. See, for instance, *Inquisitionum Retornatarum Abbreviatio*, Fife, No. 877, compared with Nos. 1134, 1143.

In Glasgow and elsewhere the field so divided was known as a croft :—"campus qui dicitur le Croupis," otherwise Crobs or Cribb's Croft. *Liber Collegii N.D.* p. 156. Cf. *Inquisitiones Speciales*, Lanark, No. 249. Campus de Bromilaw = Bromilaw Croft. *Liber Collegii N.D.* p. 156. Una acra terre jacens in Brvmelaw . . . Item una alia riga terre jacens in eadem crofta. *Ib.* p. 42. So, too, in Edinburgh, *campus* = croft. *Registrum nigrum de Aberbrothoc*, pp. 57, 58.

Gawane Douglas translates *campos* as crofts. *Aen.* ii. 498.

Achadh is explained by Timothy Pont as a fold or manured croft of land gained out of wild ground before unmanured. *Cunninghame Topographized*, p. 9. Achadh is rendered *campus* in an old writ: "Brecachath quod interpretatur, *campus* distinctus coloribus." *Collections for the Shires of Aberdeen and Banff*, p. 172.

Campus = achadh = a croft or manured field. *Terra campestris* = croft land. When the use of Latin died out *terra campestris* became "arable land," as in the examples above, and it is used in this sense in the French chartularies.

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[1] Perticatae = aggeres, *Registrum Episcopatus Glasguensis*, ii. p. 454; = rodae, *Munimenta Universitatis Glasguensis*, i. p. 23; *Diocesan Registers*, ii. 195. Tres rudae sive perticatae terre in burgagio burgi de Banffe. *Registrum Episcopatus Aberdonensis*, i. p. 288. Particata terra = the rude off lande. *Fragmenta Collecta*, c. 54. Particata terrae nuncupata, ane ruid rig. *Inquisitionum Retornatarum Abbreviatio*, Lanark, No. 156.

Aggeres = rodae. *Liber Collegii N.D.* p. 47; *Diocesan Registers*, ii. p. 171. Aggeres = rigae. *Liber Collegii N.D.* 97. Particatae sive rodae. *Inquis. Abbrev*, Lanark, No. 147. Rodae sive perticatae. *Liber Collegii N.D.* 174. Cf. pp. 240, 247. 3 perticatae sive rodae. *Inquis. Abbrev.* ii. Lanark, No. 147. 1 perticata terrae nuncupata ane mid rig. *Ib.*

in couples, making half an acre,[1] two of which, or four strips side by side, as a rule, formed an acre. This explains the configuration of the city, along the line of what is now Trongait and Argyle Street. The strips which formed the Langcroft rigs, ran north to Back Cow Lone (now Ingram Street),[2] while those in the Muthill

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No. 156. 8 rigs = 2 acres. *Liber Collegii N.D.* p. 244. Rigs are sometimes mentioned as "containing the ancient and accustomed width," *e.g.* Renwick, *Protocols*, No. 204 ; No. 209. This was in the Pallioune Croft.

[1] 17th April, 1588, infeftment is given in "the half of a half acre of land, extending to the fourth part of an acre, commonly called ane rood of land." Arch. Heygate, *Protocol*, iii. f. 59. Renwick, *Protocols*, No. 3123. 31st May, 1589, "It is statut and ordainit that all personis quha hes ony of the tounes commoun landis that they haif ane merche stane of ane car dracht to be placit at everie half aiker end of the said common land." *Burgh Records*, 1573-1642, p. 137 (Burgh Records Society).

[2] In 1655, and for centuries before, the whole land on the north side of Trongait was divided into rigs with barns and kilns next the highway. See *Burgh Records*, 5 May, 1655. On 5th May, 1634, the Corporation purchase "James Brounes barne yaird and rig of land at the bak thairof, by and nixt to the West Port, on the northe syde thairof." The town's rigs extended from Trongait northwards to the lands of Ramshorn—*i.e.* to the present Ingram Street. Cf. *Town Council Minute*, 18 February, 1660. MacArthur's Map of 1778 shows a strip between Trongait and Back Cow Lone belonging to the Town immediately to the east of Hutchesons' Hospital. This map was originally published in four sheets, and the late John Buchanan, writing in 1856, refers to "a fine copy which is preserved in the library of the Andersonian University," *Glasgow Past and Present*, iii. p. 637, first edition ; vol. ii. p. 428, second edition. Mr. Peter Bennett, the librarian of the Glasgow and West of Scotland Technical College, now in possession of the Andersonian property and library, has made a very careful search for me in the library and can find no trace of this map. The proposals for its publication were advertised in the *Glasgow Mercury*, 15 October, 1778.

or Mutland Croft on the south extended to Briggait and the Old Green,[1] say, now Ropework Lane, a distance in each case of a furlong or furrow long,[2] the length turned up at one draught of the plough.[3] The

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[1] Two roods of land extending from the Green of Glasgow on the south to St. Thenew's gait on the north (1487). *Liber Collegii N.D.* p. 200. Cf. *ib.* p. 116; *Munimenta Universitatis Glasguensis*, i. p. 35. See *ib.* p. 193, where two rigs are said to be 16 ells in width. A rood of land on the west side of the common way near the Stokwellgait is described (1505) as being 6 ells in width. *Registrum de Passelet*, p. 433. We have, in 1468, two roods of land in the Freir, that is the Black Friars, Wynd of Glasgow measured according to the custom of burghs in length and breadth. *Liber Collegii N.D.* p. 182.

[2] The furlong = a line of 40 rods long. This squared = "*stadialis ager*" or acre, *i.e.* a quarantene, *Domesday Studies*, i. p. 371. Maitland, *Domesday and Beyond*, p. 372 *sqq*.

[3] A furlong is 10 chains in length. The imperial chain is 22 yards; the Scots chain is 24 ells in length. The furlong, therefore, is 220 yards imperial or 240 ells Scotch, as the case may be. The normal imperial acre is 10 chains x 1 chain, *i.e.* 220 x 22 square yards = 4840 yards. The Scots acre was 240 x 24 ells = 5760 Scots ells. The rood, *pertica*, *rig*, or *agger*, is one fourth, *i.e.* 220 yards by 5½ yards,—otherwise 40 poles or perches x 1;—or in Scotch measure, 240 x 6 ells,—otherwise 40 falls by one fall.

The Scots ell is 37 inches, see "Assisa regis David de Mensuris" c. 1. *Acts of the Parliaments of Scotland*, i. p. 673. The Scots ell varied from 37 to 38½ imperial inches in the various counties. The standard ell of Edinburgh was 37.0598 imperial inches. The Scots chain of 24 ells was therefore 74.1196 imperial feet in length.

There is an old Scottish ell-wand in the Kelvingrove Museum. It is somewhat worn and difficult to measure exactly, but it is about 37$\frac{1}{10}$ imperial inches in length, with inch and two inch divisions at one end, the latter being the Scottish nail. The quarters are also marked. The divisions are indicated by brass-headed studs or pins with a line under each.

The barony ell was 42 inches. The English ell was 45 inches.

Old Wynd and New Wynd, between Trongait and Briggait, are each very much like what one of the rigs was.[1] When the New Vennel, leading east from the High Street to the Malindinor burn, about 12½ Scots chains in length, and immediately north of the College, was formed in 1666, the town purchased a rig of land from Sir William Fleming of Farme, Commissary of Glasgow, appropriated four ells in width for the purpose and resold the balance.[2] Miller Street, with the houses that align

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The Scots mile contains 8 furlongs; a furlong contains 40 falls; a fall is 6 ells or about 18½ feet. A Scots mile therefore contains 5920 or 5952 English feet, or roughly 1184 paces of 5 feet each. By Act 1685, c. 44, it was appointed that the mile contain 1760 yards, or 5280 feet, the same as the English mile, but the people still continued to reckon by the old Scots mile. See *Treatise of Weights and Measures*, p. 20, Aberdeen 1762, 12mo; Paterson, *The Scots Arithmetician*, pp. 5, 6, Edinburgh 1685, 12mo; [Lord Swinton] *A Proposal for Uniformity of Weights and Measures in Scotland*, Edinburgh 1779, 8vo; Elgen, *Tables for converting . . . Old Weights and Measures*, pp. 14, 37, 69, Aberdeen 1827, 12mo, 2nd edition; Hunter, *Treatise of Weights, Metes and Measures*, p. 9. *Ib.* 1690, 8vo. Balfour, *Practicks*, pp. 441, 442.

[1] According to M'Ure, *A View of the City of Glasgow*, p. 132, ed. Macvean, Old Wynd and New Wynd are each 250 ells in length; the former is 5 ells 2 feet, and the latter 5 ells in breadth, measurements which give very nearly a rood Scotch measure. The actual intended width of the New Wynd was 6 ells. See feu disposition by David Lindsay in favour of Thomas Craig. Renwick, *Protocols*, No. 2259. See Map, p. 80.

[2] *Town Council Minutes*, 24, 29 December, 1664; 4 November and 30 December, 1665; 17 March, 19 April, 20 September, 1666; 24 August, 1668. The Vennel being about Scots 12½ chains by 4 ells would contain 1200 ells or a little less than half a rig. The Vennel is shown on the plan, by W. Douglas, prepared in 1777 in the action John Aitken and others *v.* The University of Glasgow, 1778, n.r. See p. 122.

The house gifted by Sir Thomas Arthurle to the Pedagogy fronted it, represents eight rigs of croft land; Queen Street about ten rigs.[1] Each street is a little over ten Scots chains in length. The existing frontages to Argyle Street, both west and east of Miller Street, show that the area to the north was originally divided into rigs or roods.

The standard for Scots land measurements is the fall, a metwand or rod (*pertica*) or raip, six ells or 18½ feet in length.[2] Thirty-six square ells make one square fall

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the High Street. The rigs behind it—in recent times the College Gardens—stretched down to the Malindinor and came to be known as the Pedagogy croft. *Registrum Episcopatus Glasguensis*, ii. p. 438; Renwick, *Protocols*, Nos. 91, 259. On the other side of the burn was the Dowhill croft, *ib.* See Plan, p. 76.

Commissary Fleming owned "a great tenement" on the opposite side of the High Street, immediately to the south of Grey Friars or Barr's Wynd. Sasine James Mitchell and Margaret Loch spouses, dated 21st April, recorded *B.R.* Glasgow, 20th May, 1735.

[1] *Glasgow Past and Present*, ii. pp. 406, 421. The houses on the east side of Miller Street were erected in 1778 and commanded "a fine back view of the city." *Glasgow Mercury*, 9 April, 1778.

In 1643 the Preceptors and Patrons of Hutchesons' Hospital purchased from the College four of the rigs in the Langcroft, on which they built the Hospital to the front, with a long garden running north to the Back Cow Lone, now Ingram Street. M'Ure gives a pleasant picture of the garden in his day, 1736. "From and towards the north of the Hospital there are very pleasant and delectable gardens that are well kept and much resorted to for the recreation of walking in them." *View of the City of Glasgow*, p. 69.

[2] "Sa meikle lande as in measuring *falles* under the rod or raip in length is called ane *fall* of measure or ane *lineall fall*." Skene, *De verborum Significatione*, s.v. "Particata." In baronies the rood of land should contain 6 ells, that is 18 foot of a middle-sized man; in burghs it was 20 foot of a like man. *Fragmenta Collecta*, c. 54; Paterson, *The Scots Arithmetician*, p. 6.

In France the length was very variable. In the department of or *perticata terrae*. The normal Scots rood contains 40 of these falls, that is 40 falls or one furlong in length by one fall or 6 elns in width. Each strip or rig (*agger*) thus contained 40 square falls, whence they are known as *perticae*, perticates, or particates, that is roods, and the burgesses who owned or occupied them as "Particatemen."[1] The burgh roods on the west side of the Stockwell were six ells, that is a fall, in width,[2] and must consequently have been 240 in length. In other words, they ran westward to about the line of Maxwell Street. The old ropework which occupied what is now East Howard Street, including the lane joining it to the Stockwell, was just about 40 falls or 10 Scots chains in length, and at its western extremity was one Scots chain in width, that is one Scots acre in area.

The rigs at the back, that is to the west, of the old Flesh Market, now known as the Candleriggs, were 5 ells in width,[3] which nearly corresponded with the width of those between the Trongait and the Briggait.[4]

At each end of the strips was a gait (*via*)[5] or loning or lone (*vicus*) by which access was had to them. For

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Eure-et-Loire it was 20 feet 13 inches (French) = 7 metres 38 millimetres. *Cartulaire de Chartres*, Prolégomènes, §§ 151, 161, Paris 1840, 4to.

[1] Wilson, *Annals of Hawick*, pp. 324, 327, 391, 392; Jeffrey, *History of Roxburghshire*, iv. p. 283.

[2] *Registrum de Passelet*, p. 433.

[3] *Burgh Minute*, 17 August, 1658.

[4] See *supra*, p. 104, note.

[5] "Gait" is the equivalent of our street, and the streets of Glasgow and other Scots burghs were thus named—Drygait, Gallowgait, Trongait, Walcargait, Fishergait, Stockwellgait, St. Tenew's gait, Westergait, "the gait passing fra the West Port to Sanct Tenewis Chapell," *Liber Collegii N.D.* p. 138; "the gait that cumis fra the Croce to the Blak Freeris," *ib.* p. 98; the Commongait, *ib.* 247. "The King's street or

instance, the Langcroft lay between St. Tenew's-gait upon the south and the Lonyng or Back Cow Lone upon the north, while it was separated laterally from the Palyard Croft by the Common Lone,[1] latterly known as the Cow Lone; the Broomielaw Croft was bounded between the common lone or passage by Clyde side upon the south[2] and the public lone which goes to Drummodir Hill (now Cranstonhill) on the north.[3] The rigs were separated, not

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gait sould conteine in breid xiiij fute." Balfour, *Practicks*, p. 442. *Gait* is the provincial English and middle English *gate*, a way. Sweet, *Etymological English Dictionary*, s.v. It is rendered *via* in the records; thus Drygait is *Arida via*, a literal, but not very accurate translation.

[1] *Liber Collegii N.D.* p. 140.

[2] Sasine, 20 February, 1604, in one rig in Brumylaw croft; the lands of Mathew Trumble on the west, the lands of Margaret Hall on the east, the common lone or passage beside Clyde on the north, and the public lone which goes to Drummodir Hill (Mons de Drummodir) on the north. Archd. Heygate's *Protocol*, f. 13. See also *ib.* f. 1.

This passage was not close by Clyde side. Between the river and the croft there was a piece of vacant land or common; the road ran between this land and the croft. See Renwick, *Protocols*, No. 2886. Till a comparatively recent date, say about 1830, there was a green parallel with the river, immediately to the west of the Broomielaw croft, bounded on the north by the road from the Broomielaw to Pointhouse, which was the old lone or passage above referred to. To the north of this road was garden ground extending north to Anderston Walk, through which Washington Street was formed about 1825. Some of the rigs stretched east and west. Thus Thomas Donald of Geilston had six roods on the Broomielaw croft, three lay east and west upon Clyde and three were upon the south side of the road leading to Anderston. *Glasgow Mercury*, 1 August, 1787. See also Renwick, *Protocols*, No. 900.

[3] The hill in later days was incorrectly called Drumover hill. *Glasgow Past and Present*, i. p. 79. Now it is Cranstonhill, also an old name, in use as early as 1595. Renwick, *Protocols*, No. 3348; cf. No. 1510.

by hedge or wall, but by turf balks (*scamna* or *porcae*), covered with weeds and brambles, so that the whole croft had the appearance of one great field, as may be seen in several of Captain Slezer's Views.[1] Fields, however, have to follow the configuration of the ground, and cannot always be made of the same size or shape; and consequently there were long strips and short strips, great rigs and curt or short rigs, great roods and cut or short roods,[2] and what sounds curious to our ears, meikle or great acres, small acres, and middling acres (*mediae acrae*). Thus we meet with "*duo curti aggeres*, lie cutt riggis," or "ly twa cut riggis" in Kynclaith;[3] a short rig of land called "ane curtrig in the Longcroft";[4] a great rig (*magna riga*) in Palyard Croft;[5] "ane mekill aikir of land in Broomelaw";[6] five rigs (*quinque aggeres sive rodae*) with a curt rood or rig (*curta roda*) in the Lang Croft;[7] a great acre (*magna acra*) called "The How Akir" in Cropnesto,[8] which is explained to be five rigs, *i.e.* roods (*quinque aggeres*);[1] a great acre in Broomielaw Croft;[2] a curt rig (*curtus agger*) of arable land in Longcroft;[3] four rigs with a cut rig (*quatuor rigae cum curta riga*) adjoining in the same croft;[4] seven roods, with two cuts (lie cuttis) on Eglissemis Croft;[5] "the two cut rudis lying within the territory of Denesyde."[6] So too in Paisley, the Sasine Register,[7] down to our day, is full of conveyances of half acres of common land in the Lang Roods and the Short Roods of Giffen, and in the Lang Roods and the Short Roods above the Greenhill, and so on.

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[1] Slezer, *Theatrum Scotiæ*, *e.g.* Plates, Nos. 21, 28, 40, Views of Haddington, Hamilton and Arbroath. The rigs were not flat like ours, but round-backed or barrel-shaped, as shown in the Views.

[2] The cut roods were the *agri subsecivi* of the *Agrimensores*. See Frontinus, *De agrorum qualitate*, i. 5; Blume, *Die Schriften der römischen Feldmesser*, i. p. 6, Berlin 1848, 8vo. Called "cuttings." *Registrum Episcopatus Aberdonensis*, i. p. 399.

[3] *Liber Collegii N.D.* p. 44; cf. *Registrum Episcopatus Glasguensis*, p. 453; Renwick, *Protocols*, No. 743.

[4] Renwick, *Protocols*, No. 1411.

[5] *Liber Collegii N.D.* p. 45. *Plenaria acra* is (*supra*, p. 22) a complete or normal acre. *Liber de Dryburgh*, pp. 117, 123.

[6] *Extracts from the Burgh Records*, 1663-90, p. 531.

[7] *Liber Collegii N.D.* pp. 47, 98.

[8] *Ib.* p. 47.

When the strips lying in one direction did not end in a 'loning' or 'gait,' but ran against others lying in a cross direction, they were known as 'butts.' Thus we have a conveyance of six rigs (*aggeres*) lying *contigue* upon the common loning on the Hill of Kynclaith, and of six butts upon the same hill, also lying *contigue*.[8] Edward Scott, a well-to-do burgess, died in 1564, leaving a considerable amount of property, which was divided amongst his heiresses portioners,—his three surviving daughters and the son of a deceased daughter. He had an acre in Kynclaith, consisting of three rigs and as many butts; which the arbiters apportioned thus: "The thre rigis to be in thre pairtis and the three buttis to be the fourth pairt; and every rig of the thre rigis sall pay yeirlie of annuell to the thre buttis threttie twa penneis becaws every rig is mair nor the thre buttis;" that is, the proprietor of the butts got 8s. a year from the owners of the three rigs for equality of division.[1] Again we have three butts in Kynclaith and two cut rigs in Eglissemis croft.[2] This arrangement, while necessary from the shape of the land, caused considerable inconvenience in cultivation.[3]

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[1] *Liber Collegii N.D.* p. 87.

[2] *Ib.* p. 102.

[3] *Ib.* p. 87; Renwick, *Protocols*, No. 1881.

[4] *Liber Collegii N.D.* pp. 97, 98. "The Cut Rudis in the Longcroft." Renwick, *Protocols*, No. 10.

[5] *Liber Collegii N.D.* p. 101; Renwick, *Protocols*, No. 2464.

[6] Renwick, *Protocols*, No. 38.

[7] See the printed Abridgements or the Minute Book of the Particular Register of Sasines for Renfrewshire and the Barony and Regality of Glasgow. The Draft Minute Book was presented to the library of the Faculty of Procurators in Glasgow by Mr. Thomas Hill, the last keeper, when the Register was closed by statute, and is convenient for reference.

[8] *Registrum Episcopatus Glasguensis*, i. p. 453.

The adjective 'contigue' indicates another feature of the system. The holding of the individual burgess did not consist of a single rig, but of several, and these again were not side by side in one lot, but were scattered here and there in single roods, or in half acres throughout the different burgh crofts. This was not the case in the conveyance just quoted, as it is explained that the rig lay 'contigue,' that is, together.[4] But there is no dearth of examples of their being separate or 'discontigue.' Thus in 1567 Mr. Michael Chisholme, Vicar of Cadder, was possessed of a large number of pieces of land in the crofts of Cropnesto, Kinclayth and Kilhill. To Margaret Rankyn he sold two acres of land, then occupied by her, lying discontigue;—one rood in Cropnesto croft; a half acre called the Howdaill in Cropnesto, separate from the former; a half acre in Kinclayth, another half acre in Kinclayth in a different place from the last; a third half acre in Kinclayth; and a rood in Kinclayth in another part of the croft. These six pieces made up the two acres. To James Mayne he sold other two acres in Kinclayth lying discontigue, one acre being in one part of the croft and the second in another part. To Martin Craufurd and his wife he also sold two acres in Kinclayth lying discontigue divided into three holdings, two of half an acre each and one of a whole acre. In the croft called Kilhill he sold an acre to George Burell; three rigs lay together and the fourth apart from them, but a fragment of the whole acre was detached and lay in another spot. To Archibald Lyon he sold another acre in Kilhill croft which was in one piece.[1] Michael Chisholme had also two acres of arable land in the Broomielaw croft, lying discontigue in three separate parcels. Two rigs were in one part of the croft, two in another, and an acre was in a third part. These he sold in 1573 to David Lindsay of Kittochside, a citizen of Glasgow, who, three years later, settled them on Isabella Hamilton of Trearne in view of his marriage with her.[1] In 1586 George Herbesoun and his wife resigned, in favour of John Herbesoun, his cousin, two acres of arable land lying discontigue in the croft called Dowhill, one of which lay in one quarter and the second by rindaill, that is alternately with other pieces of land, and was probably outfield.[2]

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[1] Sasine Heirs of Eduard Scot, 14 March 156$\frac{4}{5}$. William Hegait's *Protocol*, iii. fo. 64. Renwick, *Protocols*, No. 826; cf. *ib.* 2464.

[2] Sasine Flemyngs, 27 October, 1582. Archibald Heygait's *Protocol*, i. fo. 72. Renwick, *Protocols*, No. 2464.

[3] "The baillies and counsell [of Lanark] statutes and ordaines in all tyme heirefter that no man quho hes endes of landes lyand to the braidsyde of ane uther that they na wayes wynd upoun the braidsyd of the said land bot make ane heidrige within themselffes and aither teill or delve the samine, under the paine of fourtie schilling ilk persone for ilk transgressione." *Burgh Records of Lanark*, 28 April 1659.

[4] Contigue = contiguous; not contagious as a well-known Glasgow surveyor used to explain it.

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[1] Sasine Margaret Rankyne, James Mayne, Marten Craufurd, George Burell and Archibald Lyon, 4 April, 1567. Henry Gibson, *Protocol*, i. fo. 135-138. Renwick, *Protocols*, Nos. 1549-1553.

In 1587 John Gilmour and his wife were infeft in three half acres in the New Gallowmure lying discontigue, one half acre having the lands of the late George Herbesoun on the east and of Gilbert Craig on the west, another between those of Gilbert Craig on the east and of William Kneland on the west, and the third between those of William Kneland on the east and of Robert Broom on the west.[3] In 1588 James Hall,—in addition to a tenement and kiln on the south side of Drygait, with brew-house and garden in an angle of the Malindinor, which bounded it on the east and south,—had four half acres or rigs in the Gallowmure, one in Young's croft, a second in Mure's croft, a third in a different part of the same croft, and the fourth in

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[1] Renwick, *Protocols*, Nos. 1968, 2261.

[2] Archibald Heygate, *Protocol*, ii. fo. 65. Renwick, *Protocols*, No. 2889. Runrig is the term applied to the holding of alternate rigs. Rundale is used of the same kind of holding in larger parcels. The usual practice was to hold the croft land in *runrig*, the outfield in *rundale* and the pasturage in *common*. See the Session Papers in Prestwick *v*. Newton, 1757, *Islay Campbell's Collection* (Advocates Library), vol. vi. Nos. 11 and 12. See also Gray *v*. Richardson, 14 July, 1876, 3 *R*. 1031 : H. L. 3 *App*. *Ca*. 1.

[3] Archibald Heygate, *Protocol*, iii. fo. 9, 1 August, 1587. Sasine Robert Gilmour and Jean Wedrop, spouses. Renwick, *Protocols*, No. 3041.

Young's croft, separate from the first, and a fifth half acre in another part of the Gallowmure.[1] In 1600 George Brwme and his wife were infeft in three acres of croft land lying discontigue in the Gallowmure—formerly the Common Mure, as the record explains. One half acre lay in Bell's Croft; an acre lay in Glenn's Croft; a half acre in Young's Croft; and two half acres discontigue in Mure's Croft.[2]

In the same year Margaret Fleming held a garden and kiln on the north side of St. Tenew's gait between the lands belonging to the Bedellus of the University of Glasgow on the west, and the lands of Stephen Hill on the east, one acre of land in Pailzeone Croft and the Langcroft lying discontigue, three roods of it in the former and one rood or rig in the latter; one acre in Crubb's Croft, and another acre lying discontigue on Garngadhill, one half in one quarter, and the other half in another.[3]

In 1604 Mathew Merschell, merchant in Glasgow, had Sasine of an acre of land in the Broomlands Croft, discontigue, in two half acres lying between Clyde on south and the Mylndam on the north, the one half acre being between the lands of John Donald on the east and west; and the second between those of John

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[1] See Sasine James Hall in Craigis, son of Gilbert Hall, in one half of the above, 17th April, 1588. The succeeding Sasine takes up the other half. Archibald Heygate, *Protocol*, ff. 59, 61. Renwick, *Protocols*, Nos. 3123, 3124, 3125.

[2] Sasine George Brwme and Jonet Mure, 22nd Jany. 1600. Henry Gibson, *Protocol*, iii. fo. 65. Renwick, *Protocols*, No. 3623.

[3] Sasine 25 May, 1588. Archibald Heygate, *Protocol*, iii. fo. 72. Renwick, *Protocols*, No. 3144.

Donald on the east, and of Colin Campbell on the west.[1]

As showing the mixed nature of the holdings, take the sasine of Duncan Sempill, merchant, and Agnes Hall, his wife, in 1611. They had a tenement in the Saltmarket; a barn in St. Enoch's Croft; an acre of land in Crapnestok; a rood of land in the Blacklands Croft; a rig of land in Kinclaith; and an acre of land in Eglisame's Croft, three rigs of which lay contigue on the east side of the Burn Malindinor, and the fourth discontigue.[2]

The intermixture of rigs, each alternate one worked and in later days owned by a separate person, is known as runrig.[3] When the present Green of Glasgow was formed about the end of the seventeenth century, the lands of Crapnestock to the north and Kinclaith to the south of the intersecting Camlachie burn, now hidden in a sewer, were all held in this manner. This may be seen from the holding, just referred to, in Broomlands Croft to the east of Kinclaith. John Donald had a rig, then came Mathew Merschell's, next another of Donald's, then another of Merschell's, and lastly one of Colin Campbell's. So, too, in Gilmour's holding in the New Gallowmuir, beginning at the east, we start with George Herbertson's rig, then follow Gilmour's, Gilbert Craig, Gilmour, William Kneland, Craig, Robert Broom.

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[1] Archibald Heygate, *Protocol*, 24th May, 1604.

[2] Sasine 7th June, 1611. Archibald Heygate, *Protocol*, p. 216.
This shows that the area of each rig was a rood. Presumably it was a furlong in length. The four rigs or strips made an acre. Cf. p. 104.

[3] *Supra*, p. 114, n.

The rigs in the different crofts seem, in some cases at least, to have followed the same rotation of ownership, *A* and *B* and *B* and *C* respectively being neighbours in Crofts I. and II. Thus, Thomas Blair and his wife Isobella Scheillis had two rigs, one in the Langcroft and the other in the Broomielaw Croft, in each of which they had as one of their next neighbours, Margaret Hall;[1] and it is an easy matter to multiply such examples.

The western crofts, Langcroft, St. Tenew's Croft, and the Broomielaw Croft, along the line of Trongait and Argyle Street, were wholly transferred by the community to individuals at a very early date. This was not the case, however, as respects those in the eastern section of the burgh territory. Rigs here and there in Kynclaith, Cropnesto, Blacklands, and Eglisame's Croft were, no doubt, held in private property, but the community retained a substantial interest, till late in the sixteenth century, in the adjoining croftlands of Mylndam, and in Dassiegreen and Peatbog[2] and the Greenheid.[3] These were let out in rigs, on tacks or leases of short duration, which explains how it was that here runrig was more enduring than in the western crofts.

The great bulk of the *terra campestris* was under cultivation down to a comparatively recent time.[1] Speaking of Glasgow at the date of the foundation of the University, in 1451, Gibson estimates[2] that the total population might be about 1500, and adds that "their wealth consisted in a few burrow roods, very ill cultivated, and in some small cattle, which fed on the commons."[3] A century and a half later the well-to-do burgess had his barn and girnel for storing his grain and meal, like a country laird.[4] The minutes of the Town Council are full of references to agricultural matters, barns and kilns,[5] the protection of corn and grass, beans and pease, gardens and orchards. It is statut and ordaint "that na maner of persoun be fund in wther menis stuff powand thirsillis or any wther wedis, but their leif."[1] No sheep are to be kept in order that the wheat may be preserved;[2] complaint is made of unfair tillage.[3] In 1560 a rig in St. Tenew's Croft, now the site of St. Enoch Railway Station, was sold subject to the payment of 18 pecks of good and sufficient barley to the Master of St. Nicholas Hospital. In 1565 portions of a rig in the same croft are sold for payment of 9 pecks of barley and 6s. 8d. in money.[4] David Lindsay of Kittochside, already referred to, acquired a large portion of Mutland Croft towards the end of the sixteenth century, and began to lay it out for building; and for this purpose formed the two streets known as the Old Wynd and the New Wynd. In 1573 some houses had been built along the Trongait frontage, but the southern portion towards the Briggait still lay in open rigs and was under crop. In purchasing the land the feuars were taken bound to uphold a gate for preserving the croft from damage and the destruction of the crops by animals.[1] When the Town Council sold the lands of Dassiegreen and Peatbog in 1588 they had to reserve a road to Provostshaugh and other lands to the east, and made provision that it should be "on all pairtis the braid of sex futtis, and that throuch the same ane horse chairgit with ane car full of corne or ony uther kinde of stuffe may easilie repair thairthrow."[2] In 1596 hemp was sown on Linningshaugh, the westmost portion of the present Green.[3] Relief was given to the burgesses of Glasgow who had their corn destroyed by the English soldiers during the Commonwealth.[4] In the middle of the seventeenth century lint was grown on the burgh lands and steeped in holes on the site of the present St. Rollox works.[5] Teind was drawn in kind, and the clergy had their teind barns.[6] Teinds were so drawn from the crofts along the present Trongait and Argyle Street, down to at least the end of the seventeenth century, and in 1684 the archbishop complained that he could not get access for the purpose, to what is now the Green, by reason of a wall built from the Malindinor, say about the Saltmarket, eastwards. The town then took a nineteen

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[1] Archibald Heygate's *Protocol*, f. 13, 20 February, 1605.

[2] Kynclaith lay between Mylndam on the north and Peitbog on the south. See Sasine Archibald Blackburne, 9th April, 1558. William Heygait, *Protocol*, ii. f. 79; Renwick, *Protocols*, No. 432; cf. *ib.* No. 68, 2393.

A road ran between Mylndam and Kynclaith; and on the west of Kynclaith. See *ib.* Nos. 2419, 2298, 3276, 3280. *Burgh Minute*, 24 December, 1588.

[3] See *supra*, p. 84.

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[1] Brown, *History of Glasgow*, ii. p. 83.

[2] Gibson, *History of Glasgow*, p. 74.

[3] "Ane callit Scot, a mareit man,
Nocht verie riche in worldlie guddis,
Save tuo pure aikers of borrow ruddis."

Satirical Poems of the time of the Reformation, i. p. 361. Edinburgh 1891 (Scottish Text Society).

[4] In 1584 Sir George Elphingston of Blythswood, bailie of Glasgow, bequeathed to his wife the wheat and bear in his barn. Testament dated 1 March, 1584. Confirmed Commissariot of Edinburgh, 23 May, 1587. A considerable quantity of grain is included in the Inventory of George Harbertsoune, burgess of Glasgow, made up by himself at his own dwelling house in Glasgow, 17 May, 1586, before "Mr. Thomas Archibald, persone of Cardros, Thomas Hutchinson in Lambhil, and John Harbertsoune in Gallowgait." He died 10 June, 1586. Testament confirmed Commissariot of Edinburgh, 19 May, 1587.

[5] See for instance the Rental of Glasgow in 1590. *Burgh Records*, 1663-90, pp. 532, 539, 540, 542, 544 *sqq.*, Glasgow 1905, 4to.

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[1] *Burgh Records*, 24 May, 1577.

[2] *Ib.* 3 October, 1577.

[3] Hill, *The Merchants' House*, p. 130.

[4] Sasine Archibald Gray, 21 February, 15$\frac{59}{60}$. William Hegait, *Protocol*, ii. fo. 120; Renwick, *Protocols*, Nos. 528-30; Sasine John Auldcorne, 26 April, 1565. William Hegait's *Protocols*, iii. fo. 70; Renwick, *Protocols*, No. 834.

The property in Turner's Court, on the south side of Argyle Street, immediately adjoining St. Enoch's Railway Station, is described in present day conveyances as "All and Haill these lands which sometime belonged to James Stirling, merchant in Glasgow, which were of old two barns and a yard and thereafter a barn and laigh forehouse above the same in front towards the High Street [*i.e.* Argyle Street] and two laigh dwelling houses and one high dwelling house, stable, brewhouse or byre and close at the back of the same with three ridges of land at the back thereof [now within the station] and pertinents lying within the territory of the burgh of Glasgow in that croft called Saint Enoch croft." *Burgh Register*, vol. 629, pp. 27-32.

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[1] Renwick, *Protocols*, No. 1998. [2] *Burgh Records*, 19 April, 1589.

[3] Marwick, *Glasgow Charters*, i. Appendix, p. 39.

[4] *Town Council Minutes*, 6 February, 1652; 22 January, 1653; cf. 4 October, 1651.

[5] *Ib.* 12 August, 1648; 24 July, 1658; cf. *ib.* 16 December, 1598.

[6] *Ib.* 4 August, 1581.

In 1684 the teind was actually drawn, which implies that the land was in cultivation. In 1640 barns were hired by the town for storing the teind sheaves of certain burgh lands then taken from the bishop. *Burgh Records*, 1 and 29 August, 1640.

years' lease of the teinds at a rent of 1800 merks a year. At this time houses had been built upon part of the crofts in question, which apparently, it was thought, made the land non-teindable.[1]

In 1724 King Street was opened through garden ground in Mutland Croft,[2] the Candleriggs through the corn rigs of the Langcroft; and we had crofters nearer at hand than the Hebrides, whose voice had much the same tones as those of the Celt of to-day. In 1703 the tenants of the Ramshorn lands—outwith the burgh but embedded in the burgh lands—complain[1] that their families are like to be ruined by unproductive improvements, and the barrenness of the ground. In 1705 another tenant says "that gif he get no ease it will wholly brak him, and incapacitate him to bruik the land any longer."[2] In 1775 the population was about 40,000, and Glasgow was a commercial city of some importance, but James Barry's[3] map, published in that year, shows that the whole of the land to the north of Ingram Street was open; the Molendinar separated the College Gardens from green fields to the east; the Townhead was wholly agricultural land or garden ground; the New Town was merely the buildings north and south of Trongait and Argyle Street, between the Candleriggs and Jamaica Street. On the lands of Sawmillfield, part of the Wester Common and within the burgh, lying between the Old and the New Basin and on both sides of the Canal and within 25 minutes' walk of the Cross, there were, in 1791, nine acres of growing oats with some pease and barley. The mansion house had a garden and orchard well stocked with fruit trees; and there was a considerable quantity of thriving planting upon the forty acres of which the property consisted.[4]

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[1] Marwick, *Burgh Charters*, ii. pp. 221, 349. In a question regarding the Barony glebe in 1812, it was stated that it was the received opinion that burgage property does not pay teind. See Session Papers in Magistrates of Glasgow *v.* Barony Session, 1812.

It is now settled that burgh land is liable to teind although built upon. Burt *v.* Home, 12 January, 1878, 15 *R.* 445, a Glasgow case: Learmonth *v.* City of Edinburgh, 1 June, 1859, 21 *D.* 890. The *solum* of the public streets is not, however, a teindable subject. Locality of Springburn, 2 March, 1878, 5 *R.* 718.

Under the law of the pre-Reformation Church, gardens in cities and burghs were subject to teind. *Statuta Ecclesiae Scoticanae*, ii. p. 21. Cf. *Registrum Episcopatus Moraviensis*, pp. 213, 328.

[2] Mutland Croft extended laterally from the gardens behind the houses on the east of the Stockwellgait to the gardens behind the houses on the west side of the Saltmercat.

It has been stated by some writers that King Street was opened through St. Tenew's Croft. This is a mistake. That croft terminated at Stockwellgait, its eastern limit, that is, at the gardens attached to the houses in that street. Thus, in 1563, Andrew Dunlop had sasine of a barn and garden in St. Tenew's Croft, in which Stockwellgait is described as the east boundary. Sasine, 1st November, 1563. Henry Gibson, *Protocol*, f. 101. As to the formation of King Street and Candlerig Street, see *Town Council Minute*, 25 April, 1722.

The candle-houses had been built on the town's rig about seventy years earlier.

On the adjoining burgh lands of Keppoch there were 40 acres of oats, 20 of wheat, and a large quantity

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[1] Hill, *Hutchesons' Hospital*, p. 94. [2] *Ib.* p. 94.

[3] James Barry was born about 1715, as we learn from his evidence in Aitken *v.* University of Glasgow, 1778. He was 60 in September, 1775.

[4] Advertisement in the *Glasgow Courier*, 1st September, 1791.

In 1757 the proprietors of the lands of Milton, Barrowfield, Stobcross, Tollcross and Little Govan, all now within the municipality, advertise that they intend to preserve the game upon their grounds, and to prosecute every person without distinction found hunting of hay;[1] and in the same year 24 acres of the lands of Gilmourshill, or as it is now styled Gilmorehill, the site of the University buildings, described as within a mile and half of the town of Glasgow, were under the plough.[2] In the early part of the nineteenth century there were hundreds of acres of the burgh lands under cultivation.[3] The old ridges were still visible in the New Green—what we now call Glasgow Green—less than a hundred years ago.[4]

When the population began to increase and to turn from agriculture to other avocations, market gardening became an important industry, and in the early part of the seventeenth century the gardeners obtained a Seal of Cause and became one of the Incorporated Trades. No garden stuff could be sold in the market or in the town that had not been raised within the burgh by a freeman of the craft. Until nearly the end of the eighteenth century market gardens were to be found in all parts of the royalty; on Deanside Brae, in the Rottenrow and Drygait, on the Easter Common, along

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thereupon. *Glasgow Journal*, 13th September, 1757, and similar intimations continued to be given during the next fifty years.

[1] *Glasgow Mercury*, 16 August, 1791. In that year the population within the royalty was 41,177, and with the suburbs of Calton, Anderston, Grahamston, Cowcaddens, North Woodside, Camlachie, Ladywell, *i.e.* Wester Craigs, and Gorbals, 61,847. *Ib.* 11 October, 1791. Anderston was in 1776 described as "one mile down the Clyde, on the Dumbarton Road." Loch, *Essays*, ii. p. 26.

[2] *Glasgow Advertiser*, 1st April, 1791.

[3] See the pleadings and evidence in Dawson and Mitchell *v.* Magistrates of Glasgow, 3 *S.* 136; 2 *W. and S.* 230; 6 *S.* 19; 4 *W. and S.* 81.

[4] Cleland, *A description of the manner of improving the Green of Glasgow*, p. 10, Glasgow 1813, 8vo.

the line of the Gallowgait, the Trongait, and the Westergait or Argyle Street.[1]

The dealings with the croft or field land, which have been referred to, show that land was held in property by various persons. The character of these holdings, however, may indicate that, at one time, they had been occupied on a different system. The holdings of one person in several crofts, and the intermixture of the rigs in these crofts, and the other peculiarities, which have been referred to, are the characteristics of the open field system, and it may be the case that at an earlier date the whole of the arable or croft land had been held under this or a corresponding system; that all the lands in the various crofts were periodically apportioned by the community and occupied in rotation by the burgesses according to rule.[1] If so we may conjecture that in course of time this apportionment in Glasgow became merely formal; occupation of particular lands was allowed to continue indefinitely with the same burgesses and occupation gradually crystallized into ownership. The rig or half acre of land, the burgess qualification, was known as a *daill*, the technical term for a portion or share of an undivided common field, which is evidence that such an apportionment formerly took place.[2] In Edinburgh, in the early part of the sixteenth century, the acres of the burgh muir were divided amongst the burgesses by cavil or lot, but were afterwards set up to auction.[3] When ownership had been established holding in runrig was the rule, which was found inconvenient, and attempts were made to get rid of it, where possible. In 1578 the proprietors of Linningshaugh, a Glasgow croft which contained about twelve acres, agreed that it "be delt and devydit in aikeris," and that these should be formed north and south, and not east and west as formerly, "sua that ilk ane of the rentalaris, or wedowis, maye have and gett thair parte, effering to thair rentall, be cutt or casting of cavillis, as it sal happin to fall and be devydit be sycht of the suorne men of the warde and ane mettar."[1] The Act of the Scots Parliament of 1695, which recited that lands lying runrig are prejudicial to planting and policy, and accordingly authorized their division amongst the heritors, expressly excepted burgage and incorporate acres,[2] which is evidence that in burghs the runrig system was so common that it would have been inconvenient to interfere with it compulsorily.

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[1] There are no fewer than 19 gardeners amongst the subscribers to John Willison's *Fair and Impartial Testimony*, Glasgow 1765, 8vo.

In 1776 there were market gardens in St. Enoch's Croft and Palyeon Croft, on the line of Argyle Street. *Glasgow Journal*, 18 July, 1776; and in 1785 there were others in the Broomielaw Croft, immediately to the west of Jamaica Street. *Glasgow Mercury*, 24 February, 1785. In 1790 the gardens and houses behind the cathedral were advertised for sale; "from the vicinity of these gardens to the town and the abundance of small fruits, particularly cherries and gooseberries, which they yearly produce, they may not only accommodate select parties, as formerly, with fruits, which are celebrated as being the best of their kind, but might also be converted, with considerable advantage, into elegant Tea-gardens." *Glasgow Advertiser*, 6 December, 1790.

There is much curious information regarding gardeners in Glasgow at the beginning of the nineteenth century, in the Session Papers in Campbell *v.* Dougall, 5 March, 1813, *Hume*, No. 646, p. 861. See *The History of the Incorporation of Gardeners of Glasgow*, Glasgow [1903], 8vo. As to gardens in towns, *Memorialls for the Government of the Royall-Burghs in Scotland*, p. 119. Aberdeen 1685, 12mo.

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[1] Dr. Denman Ross suggests that while there was holding in common in early communities, there never was communistic holding; that all along there was individual ownership, and that private property existed before common property. *Early History of Land-holding among the Germans*, p. 39 *sqq.*, and *The Theory of Primitive Communism*, p. 1 *sqq.* See also Maitland in *The Law Quarterly Review*, ix. (1893) p. 225: *Domesday Book and Beyond*, p. 344.

[2] A *daill* extending to half an acre of land in Crapnestock, Sasine Widdrop and Lennox, 15th January, $158\frac{2}{3}$. Renwick, *Protocols*, No. 2466. A half acre of land lying in Cropnesto, called the How-*daill*, 4 April, 1567. *Ib.* No. 1549. A rigge commonly called a *daill*, Sasine Archd. Normount, 28th March, 1589. *Ib.* No. 3268. A *daill* of land in Mutland Croft. *Ib.* No. 2045. The front part of a rigge, commonly called a *daill* in the croft called Dowhill, 1589. *Ib.* No. 3283. Three *daills* in the croft of Dowhill. Charter, 5th August, 1564. *R.M.S.* 1546-80, No. 2956. A rig of land, lie *daill* of land, extending to half an acre of land in the Langcroft. Archibald Heygate's *Protocol*, f. 225, 7 August, 1611.

The distinguishing feature of a daill was that the land in a common field or croft (*campus*) was marked off, but not fenced.

[3] *Burgh Records of Edinburgh*, 27 March, 1532: On 1st March, $153\frac{6}{7}$, it was resolved "to roupe the vacand commoun aikeris of the

The records of the burgh of Elgin show that the crofts

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mure . . . and quha willis geve maist penny thairfor salbe hard." *Ib.* 1 and 3 March, 153$\frac{6}{7}$.

[1] Renwick, *Protocols*, No. 2633; Marwick, *Charters of Glasgow*, ii. p. 559; cf. *Burgh Records*, 1 May, 1574.

Linningshaugh was within the burgh and was burgage property, but it seems to have belonged to the archbishop, by whom it was set in rental. The division here mentioned was made by the sworn men of Partick Ward within the barony, not by the burgh liners: but a later one was made by both, *Ib.* p. 568.

[2] 1695, c. 36. *Acts of the Parliaments of Scotland*, ix. p. 421. This exception, however, it has been decided relates only to royal burghs and not to burghs of barony. Douglas and Forrest *v.* Feuars of Douglas, 22 January, 1778, 5 *B.S.* 581. See Bankton, *Institute*, i. p. 220. A minister's glebe is not to be designed out of incorporate acres in a burgh. Erskine, *Institute*, 2, 10, 59.

and common lands of that burgh were dealt with by the community in a similar manner to those of Glasgow. Many regulations for the management of the land, the protection of growing crops, of agricultural implements, and the like are recorded. In 1552 the provost, bailies, council, and community made a regulation that, in the coming year, only certain grains should be sown in the various fields, oats in one, bear in another, pease in a third, wheat in a fourth, rye in a fifth, the crops being apparently arranged in a fixed order. Any person who disobeyed the order was liable in payment of ten shillings to his neighbours on each side, besides twenty shillings to Saint Giles light, in the parish churches.[1] A common complaint in the burgh court was that some one would not keep good neighbourhood, that is, he would not cultivate his rig with due regard to his neighbour's rights.

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[1] *Records of Elgin*, p. 116.

CHAPTER VII

THE PASTURE LAND

So much for the *terra campestris*. There still remains to be noticed the *terra communis* or common land. This embraced the whole land to the north of the city, known as Wester Common and Easter Common; the Gallowmure (*Morum Furcarum*)[1] to the east, the Mylndam, the Little Green and Greenheid at Jail Square and the Old Green on the south of the city. The *terra burgalis* was the built or 'biggit' land, the *terra campestris* was the tillage land, the *terra communis*[2] was the pasture land or undivided waste, and was occupied by the burgesses in commonty, and, even when it came to be feued out and granted in property to individuals, was referred to as the common pasture. Thus, on 22nd February, 155⅔, Alexander Pettigrew and Sibell Lyddaile his wife were infeft in "six roods of the common pasturage of the community of Glasgow, commonly called the Gallow Muir" conform to charter by the town.[3] A portion of the Gallowmure was disposed of to private owners in the early part of the sixteenth century.[1] Towards the end of the century parts of Garngadhill were sold, but not without remonstrance. The wide extent of the Easter and Wester Commons still, however, remained intact and was not sold until a comparatively recent date. Some of the pasture was let to the burgesses, but in 1655 it was appointed that certain parts should not be let, but should be reserved for the cows of the burgesses.[2]

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[1] *Supra*, pp. 80, 81.

[2] Thus, Garngadhill is described as "infra commune dicti burgi ad ipsos burgenses et communitatem pertinens." Hill, *Archium Glascuense*, p. 5; Marwick, *Charters of Glasgow*, i. pt. 2, p. 26.

[3] Renwick, *Protocols*, No. 151A.

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[1] The largest grant was that of 16 acres made in 1529 to the Collegiate Church of St. Mary. *Liber Collegii N.D.* p. 131; Marwick, *Charters and Documents relating to the City of Glasgow*, ii. p. 109.

Eight of the acres lay together—contigue—on the south side of the moor, to the north of the lands of Borrowfeild. The other eight acres also lay together on the north side of the moor, and butted on lengthwise to the lands of Wester Craigs (*supra*, p. 81), which then belonged to the Sub-dean of Glasgow.

[2] *Town Council Minute*, 9 June, 1655.

In 1676 the Town Council feued parts of the Easter and Wester Commons; in 1729 they feued the lands of Petershill adjoining the Easter Common to Alexander Williamson. In 1755 they agreed to feu to Hugh Tennant, gardener in Glasgow, 42 acres of the Easter Common or Easter Moor, reserving stone and coal, in consideration of a cash payment of £280 and an annual feuduty of £10 stg. The feu contract entered into in 1763 recites that "the lands of Easter Common having past all memory, been barren and sterile; and never having been ploughed or yielded any rent or profit to the council and community," the magistrates "for improving thereof" had sold the lands by auction. In an action, Tennant *v.* Williamson (1772), n.r. relating to a road, it is stated that Tennant's lands, when acquired by him, "were part of the original commonty belonging to the town, and were possessed *pro indiviso* by the inhabitants." Two plans of this part of the Easter Common, by James Barry, the well-known land surveyor, were put in; the one was made prior to 1755 and the other in 1771.

Upon the common lands they pastured their cattle, dug peats, cut elding,[1] and quarried stones, according to regulations restraining the rights of the individual and protecting those of the community. Fuel was a prime necessity, and those who brought it into the town were specially favoured by the old Burgh Laws. "Na man aw to punde thaim at bryngis wodd or petys bot for wodd or petys or for the propyr dettis of hym that it bryngis."[2]

> Na vther lyfe we pure men bade of better
> Nor with our Naiggis to gane to Edinburgh sone,
> With Peittis, with Turvis, and mony turse of Hedder;
> Ay gat gude saill; syne lap, quhen we had done,
> For mirrynes.[3]

Broom and heather were recognized as fuel in burghs in the fifteenth, sixteenth and seventeenth centuries.[4]

The cattle were sent, and could only be sent, to the common under charge of the two herds, who were elected each year by the burgesses, one for the nether-town, that is the district below the Cross, and the other for the over- or upper-town, the district above the Cross;[5] and, like other public functionaries, were taken bound by oath and caution "for leill and trew administration in their office."[1]

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[1] Elding is fire-wood generally, but more particularly "sticks," that is broom, whins, small branches and the like (*minuta silva*). Eldynge or fowale = *focale*. *Promptorium Parvulorum*, s.v.; cf. *Diurnal of Remarkable Occurrents*, p. 262.

[2] *Leges Burgorum*, c. 35. Pit coal was evidently not in use when this rule was made.

[3] *Satirical Poems of the time of the Reformation*, i. p. 222.

[4] Act 1425, c. 23. *Acts of the Parliaments of Scotland*, ii. p. 12. *Register of the Privy Council*, 17 February, 1618. *Burgh Records of Edinburgh*, 22 August, 1516.

[5] *Burgh Minutes*, 26 March, 1574; 13 April, 1576; 26 March, 1589. Their fee. *Ib.* 1 March, 1600.

A field in the modern acceptation of the word means a piece of land carefully fenced against trespass of any kind; but in earlier times the word was used in the opposite sense. The *campus*, the field or croft of arable land, of the records, was not fenced off from the pasture land, and herding was necessary for the protection of the growing corn.[2] It was the duty of the herds, therefore, to be in constant attendance until all the grain had been led; "it is statut that it shall nocht be lafull . . . to the hirdis to gif up the keiping of the guddis quhill all the stuff be innit."[3] 'Guddis' is the technical term for live stock,[1] but included only horses and cattle. It was strictly forbidden to pasture geese, swine or sheep upon the common lands.[2] Swine were specially objected to. According to the apocryphal laws of King Kenneth or Kennedie it was incumbent to "slay out of hand a swyne that eites the corne, or with the grunth casting up the tilet ground";[3] a rule which was in accordance with that of Grenoble in France.[4]

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[1] The city of Oxford appointed a herdsman: "1561, April 16. It is agreed that the Baylies for the yere shall appoyntt forthwth an herde to kepe the Towne cattall yn Portman eight medowe, and what agream^{t} that make for his wages, this house to see for the payment." Turner, *Selections from the Records of the City of Oxford*, pp. 281, 278. Oxford 1880, 8vo.

[2] *Burgh Minute*, 21 March, 1578.

[3] *Burgh Minute*, 3rd October, 1577. *Infra*, c. x.

"11th March, 1596. The quhilk day Robert Wilsoun and Johne Or wer electit and feit herds be the said baillies and counsall for keiping of thair comoun guids fra Beltane next quhill all the corne wes shorne and input for fourtie merks fie with ane other sowme, and to keip the said guids fra pot and myre, for keiping quhairof and of all skaith that it sall fortoun ony burgesses of the said burgh or ony others haifing ky upon the comoun to cum upon the ky in defalt of the saids herds." *Burgh Minute of Paisley*, 11 March, 1596.

There was a similar regulation in Elgin regarding the pundar or poynder, 4 May, 1573. *Records of Elgin*, p. 137.

Glasgow had a poynder likewise, whose duty it was to poind stray beasts, found "damage feasant," as they say in England. *Burgh Records*, 26 March, 1574; 14 October, 1595.

The proper hirseling and herding of sheep, in classing them into distinct flocks or hirsels, and in allocating to each hirsel its proper walk for the different seasons of the year, are matters of importance to the flockmaster. The hirseling of cattle is an object of less importance, but, whatever might be its value, the burgesses of

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[1] Thus in 1657 Peter Paton claimed to be entitled to the pasturage of six soums "of guidis" upon the common pasturage of the burgh of Renfrew. *Records of the Convention of Royal Burghs*, iii. p. 453.

[2] The same rule prevailed in Peebles, *Burgh Minutes of Peebles*, 14 October, 1556; 7 February, 1572.

[3] Leslie, *Historie of Scotland*, translated by Father James Dalrymple, i. p. 123; Boece, *Chronicles of Scotland*, by Bellendin, x. c. 12; Balfour, *Practicks*, p. 681; *Fragmenta collecta*, c. 37.

As to swine in Aberdeen, see *Burgh Records of Aberdeen*, 3 October, 1398; 10 May, 1501; 8 October, 1507. In Edinburgh, see *Burgh Records of Edinburgh*, 1450. There was a 'lokman' to look after them. *Ib.* 1 February, 14$\frac{90}{91}$; 26 October, 1506.

[4] In 1519, 1531, 1540, and 1553, the municipal council of Grenoble passed ordinances forbidding anyone to allow his swine to wander on the streets, authorizing the hangman to cut off the heads of all pigs that he should meet, and promising him as a reward not only the severed heads, but a pecuniary gratification. *Mémoires de la Société Royale des Antiquaires de France*, viii. (1829) p. 431, quoted by Joseph Robertson, *Book of Bon Accord*, p. 359.

Glasgow were not allowed "to hald by hirsalis vndir the pane of aucht schillings."[1]

As late as the end of the eighteenth century the town herd was still a Glasgow official. He collected the milk cows of the townsfolk in High Street, the Trongait, and the Wynds, to the sound of a horn, and then drove them before him through Westergait (our Argyle Street) up Cow Lone (our Queen Street) to the common pasture in the north-west of the town,[2] and brought them home again in the evening by the same route.[3] The grass on the Old Green, where the

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[1] *Burgh Minute*, 3 October, 1557. Sheriff Aiton renders *hirsel* as a flock of cattle. *Agriculture of Ayrshire*, p. 692, Glasgow 1811, 8vo.

The burgesses of Peebles seem to have been very remiss in taking advantage of their right to put cattle on the Town commons. *Minute*, 6 May, 1556, and many others. From an early date it was the practice to let part of it in 'soums.'

[2] 'Senex' (Robert Reid) and John Buchanan, LL.D., state specifically "the pasturage at the Cowcaddens" (*Glasgow Past and Present*, i. pp. 284, 523; ii. 420, 2nd ed.), but this is a mistake as it stands, as Cowcaddens although embedded in the burgh was non-burghal. What is meant is the pasturage near to or abutting on Cowcaddens. *Supra*, p. 86, *n*. Denholm, *History of Glasgow*, p. 115, Glasgow 1804, 8vo, is more accurate. See also Cleland, *Annals of Glasgow*, i. p. 30. The Herd houses at Woodside, Keppoch, *i.e.* in the north-west of the burgh territory, are mentioned in 1574. *Burgh Records*, 1 June, 1574.

[3] When the present Green was formed, right was granted to the burgesses to pasture their cows upon it. The Herd's house was for long a prominent feature of the place. In 1797 there were 120 cows pastured on the Green. Brown, *History of Glasgow*, ii. p. 189.

In 1807 the grazing is advertised, three guineas for each cow and two shillings to the herd. *Glasgow Journal*, 29 May, 1807; 3 June, 1808, and other dates.

In 1813 127 persons paid a grass fee of three guineas per head. It was thought that, with the levelling and other improvements then contemplated, the number might be increased to 168 and the grass fee to

Custom House now stands, was in and about the year 1775 let by the season.[1]

The Gallowmure was covered with whins in the seventeenth century. In 1712 it was held by thirty-nine feuars and tenants, who did not pay their feu-duties and rents in money, but in victual. These amounted to 331 bolls, 1 firlot of meal,[2] proving that the land was under the plough, and that money was scarce. The only road across the mure was Witch Lone (now Bellgrove Street and Abercromby Street)—an old drove road for cattle from the south—crossing the Clyde at Dalmarnock ford and the ordinary line of communication between the cathedral and the burgh of Rutherglen.[3] In 1670 William Stirling, merchant burgess, had a licence to dig clay in any part

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four guineas. Cleland, *A description of the manner of improving the Green of Glasgow*, pp. 30-32. Glasgow 1813, 8vo. See Fairbairn, *Relics of Ancient Architecture*, No. xvii., "The Washing House on the Green." So usual was it for a town to have a common, that when Helensburgh was laid out, towards the end of the eighteenth century, a certain portion of the adjoining pasture land was annexed to it, for the use of the feuars, every one having liberty of pasturing a cow upon it at a certain rent. Ure, *Agriculture of Dumbarton*, p. 96, London 1794, 4to.

[1] *Glasgow Journal*, 20 April, 1775. It had been let for more than a century before. *Burgh Records*, 2 June, 1663; 30 May, 1674; 11 March, 1676.

[2] Brown, *History of Glasgow*, ii. p. 94. This at the conversion rate of £100 Scots per chalder, the ordinary rate in the eighteenth century, is equal to £2070 Scots, or £172 10s. Sterling. Fynes Moryson remarked on victual rents as a peculiarity of Scotland: "The gentlemen reckon their revenues not by rents of money, but by chauldrons of victuals." *Itinerary*, pt. iii. p. 155, London 1617 fol. The stipends of parish ministers are still estimated in chalders.

[3] *Glasgow Past and Present*, ii. pp. 489, 501. *Supra*, p. 66.

of the town's common lands for making pipes,[1] which shows that the lands were open and not in much request, and that the citizens were turning their attention from agriculture to trade and manufactures; and the lands continued in this condition for nearly a century afterwards.[2]

It was the freeman only who was entitled to the enjoyment of the burgh lands. The unfreeman had no rights. He might be a "house-mailer," that is he might occupy a house in the burgh if he could get one, and he might be tenant or sub-tenant of a portion of the burgh held in severalty. He could not, however, associate himself with the freemen in the enjoyment of the portion of the burgh territory enjoyed by them in common. He could not cast fail, fuel or divat upon the common, or hold his cows or horses upon it. He was allowed to cast but two dargs of elding on the common for his house.[3] The unfreemen were, however, very troublesome, and continually attempted to evade the law; and as late as 1612 very stringent regulations had to be made for the purpose of restraining them.[4]

Glasgow apparently claimed the exclusive right of fishing in the Clyde *ex adverso* of the burgh lands, and prevented the inhabitants of the Gorbals from putting salmon cobles on the water.[5]

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[1] *Burgh Records*, 3 December, 1670.

[2] The witnesses in Tennant's case, *supra*, p. 129, stated that prior to 1755 the Easter Common was used as a commonty, and for casting feal and divot, and for digging clay, by the burgesses of Glasgow.

[3] *Burgh Records*, 1 June, 1574; 31 May, 1575; 4 May, 1576; 8 October, 1583; 29 March, 1595; 21 March, 1612.

[4] *Ib.* 21 March, 1612. See *Burgh Records of Edinburgh*, 23 October, 1566.

[5] *Burgh Records of Glasgow*, 28 March, 1657.

A prominent feature of the German mark, and of the English rural township, was the division of the arable land into compartments or fields, of nearly equal size, and generally three in number, which were cultivated by the community in a certain fixed rotation.[1] In Glasgow there was a tripartite division of the tillage land, and it is possible that it had its origin in some such arrangement as this. The most suitable portion of the burgh territory for tillage was the land along the line of Trongait, and it was so used. The three crofts into which it was divided, the Langcroft, St. Tenew's Croft, and the Broomielaw Croft, are of about equal size.

"The bleakest, worst-soiled, and most distant lands of the township," says William Marshall, speaking of the rural township in England, "were left in their native wild state, for timber and fuel, and for a common pasture." This description applies with singular exactness to the Easter and Wester Commons of Glasgow.

"In the lowest situation," continues Marshall, "as in the water-formed base of a rivered valley, or in swampy dips, shooting up among the arable lands, lay an extent of meadow grounds or 'ings,' to afford a supply of hay, for cows and working stock, in the winter and spring months." The land between Clyde and Gallowgait was of a sedgy, swampy character,[2] and may very possibly have been originally used for such a purpose; and strangely enough we meet with "ings"[3] in one of the place names, Lunings-haugh or Linnings-haugh, just as we have Kinning-house and Kinning-park a little to the west and on the opposite side of the river. Glasgow topographers have been puzzled by Susanna Rig, the name of a piece of land near the site of St. Andrew's Episcopal chapel. It tells, however, of the former condition of this same land, for "susenna" means unsound or rotten pasture, and is always associated with marshland;[1] and this was the character of this land until a comparatively recent date.

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[1] Marshall, *The Landed Property of England*, pp. 112, 113; *On the management of landed estates*, pp. 128-131.

[2] Cleland, *Rise and Progress of Glasgow*, p. 274; *Improvements in the Green of Glasgow*, 1828, fol.

[3] The termination *ings* has in many cases a patronymic significance.

In addition to these, the English township had a tract of better grass-land for mowing and for the use of milking cows, working cattle, or other stock, which required superior pasturage in summer. Such may have been the Gallowmure; while the land on its west side,—the Dowhill,[2]—is referred to as "Gersum-land," "Garsumland" or "Gersmail-land,"[3] which may mean enclosed grass land.[4]

Seebohm, *The English Village Community*, p. 354; Ross, *Early History of Land-holding among the Germans*, p. 46.

[1] See *The Domesday of St. Paul*, pp. lxxvi, 48, 64 (Camden Society); Du Cange, *Glossarium*, s.v. "Susenna."

[2] *Supra*, p. 57.

[3] *Registrum Episcopatus Glasguensis*, ii. p. 588; *Munimenta Universitatis Glasguensis*, i. pp. 450, 451; Renwick, *Protocols*, Nos. 476, 554, 632, 774, 964, 1735.

[4] Cf. the Anglo-Saxon "gaerstune," = enclosed grass-land; The Dooms of Ine, § 42, *Ancient Laws and Institutes of England*, i. p. 129; Nasse, *The Agricultural Community of the Middle Ages*, pp. 17, 19.

Lord Hailes (*Ancient Scottish Poems*, p. 261, Edinburgh 1770, 12mo) suggests that the word *gersome* or *grassum* originally meant "an allotment of grass or pasture," and quotes from a charter of William the Lion to the monastery of Coldinghame, "et omnia nemora et *gressuma* sua sint sub defensione Prioris et custodia." A "grassland" was a measure of

The expansion of Glasgow as a great industrial and commercial city has swept away ancient landmarks; long tracts of land beyond the old burgh have been incorporated with it; all early buildings in the city, save the cathedral, have been demolished; old streets have disappeared or have been altered beyond recognition; water-courses have been covered over; the Clyde has been changed from a clear and shallow stream frequented by fishing boats into a deep and muddy waterway for ocean-going vessels. The early features of the town are still, however, visible under this modern garb. We can still see the primitive burgh as it was in the days of King David, and can trace the changes in its appearance, in its government and in the pursuits of its inhabitants. In its essential features the burgh remains much as it was then. The changes which have taken place have been in details rather than in essentials.

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land in the territory of Coldingham: *e.g.* "two husband lands, one *grass land* and four cottages." *Historical MSS. Commission*, 1902, MSS. of Colonel David Milne Home, pp. 196, 197. Cf. *Gerse soume*, a particular size of soume, *Ib.* p. 36.

1549, February 27, "It is statut that all the craigis and greiss thairof betuixt the Droppane craig and the landis ward salbe hanytt and keipitt fra all kynd of gudis to the Rud day [*i.e.* 14 September], and the haill guddis of the toone to be keippitt be the comone herd in the pastur of the said toone, and thairefter the haill guddis to be brot be the comone herd to the said craigis and feid thairintill anis of the day, and the remanent of the day to pass to the hittis and swa furth ilk monat to the corne be in the zard." Cramond, *Annals of Banff*, i. p. 27.

The succeeding chapters are:

CHAPTER
VIII. The Burgh Fermes.
IX. The Government of the Burgh.
X. The Head Courts.
XI. The Burgh Courts.
XII. Burgh Police.
XIII. The Common Good.
XIV. Markets.
XV. The Fair.
XVI. The Craftsmen.
XVII. Religious Life amongst the Craftsmen and Merchants.
XVIII. Foreign Trade.
XIX. The Merchant Guild.
XX. A Retrospect.
XXI. Some Neighbouring Burghs.
XXII. Rutherglen.
XXIII. Lanark.
XXIV. Burghs on the Coast of Ayrshire.

CHAPTER
XXV. Prestwick.

XXVI. Newton-upon-Ayr.

XXVII. Ayr.

XXVIII. Irvine.

XXIX. Conclusion.

The whole work will shortly be published.

JAN 31

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